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opens the June Number (from Chicago) of the new "Surgical Clinics of North America." It deals with those Fractures that are of frequent occurrence in the daily practice of the family physician as well as of the surgeon. This Symposium is fully illustrated, containing 73 illustrations.

The clinicians who present the Symposium are Kellogg Speed, David C. Strauss, Hugh McKenna, Frederick Christopher and John D. Ellis. The fractures covered are: Head of the Fibula; Femur in Children; Neck of Femur; Sternum; and Fracture-Dislocation of Carpus. There are important notes and helps on symptomatology and diagnosis and the actual application of New Treatments and Technic, such as Speed's device for the Russell traction and the Smith-Petersen operation.

Then, in addition to this Symposium, there are 12 other clinics on subjects of equal importance in general practice, including Backache, Chest Injuries, Examination of the Back, Peritonitis, Hemorrhage in Pregnancy, Uterine Bleeding, and others. There are 142 illustrations in this June Number. Turn now to Page 3 and read the Complete Contents of this fine number of the "Surgical Clinics of North America." And remember, these Clinics have been selling out of print month after month—and they are never reprinted.

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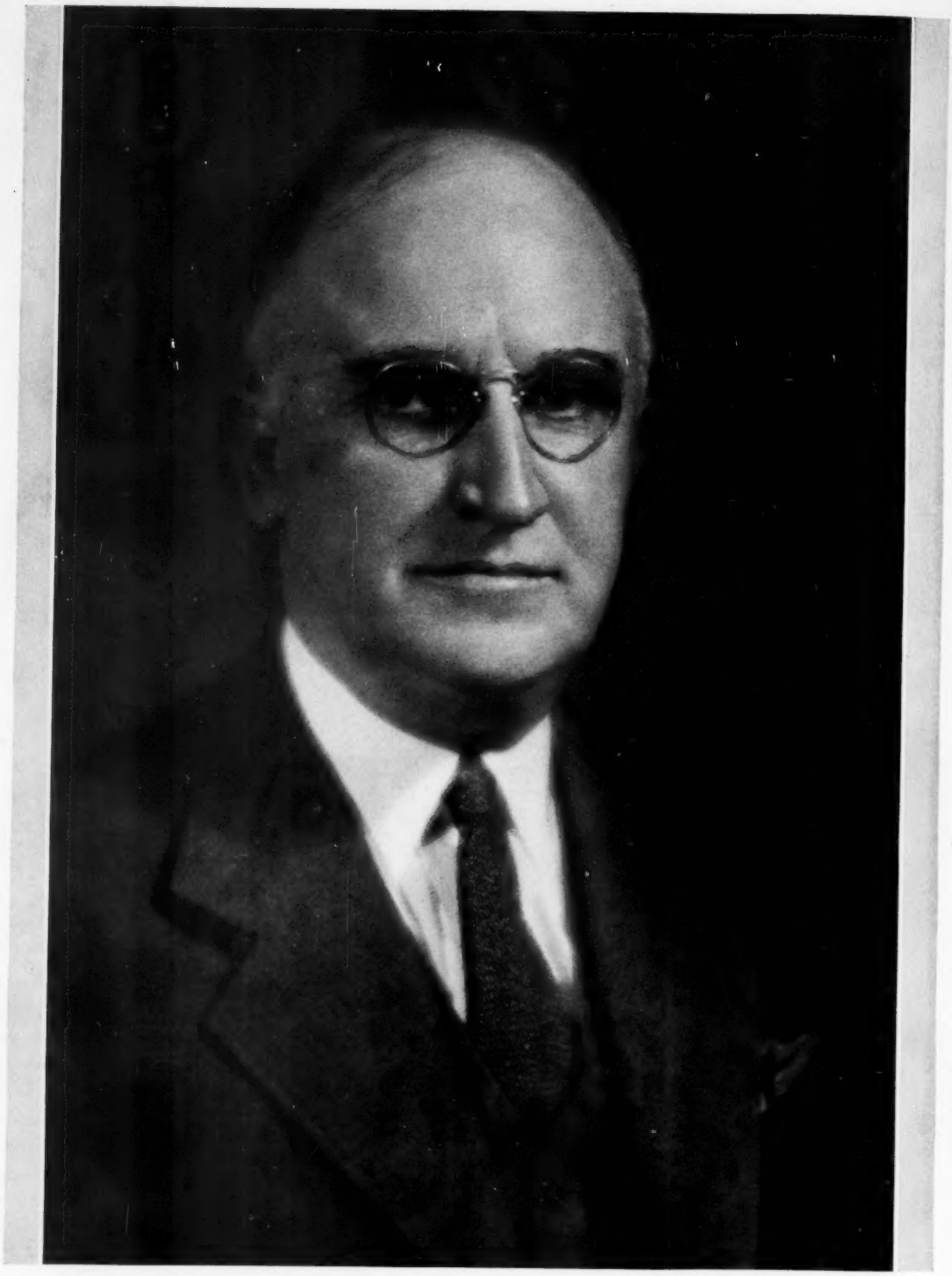

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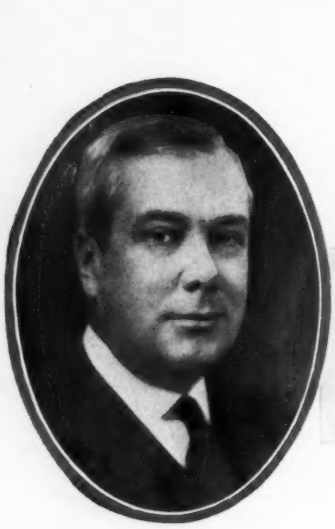

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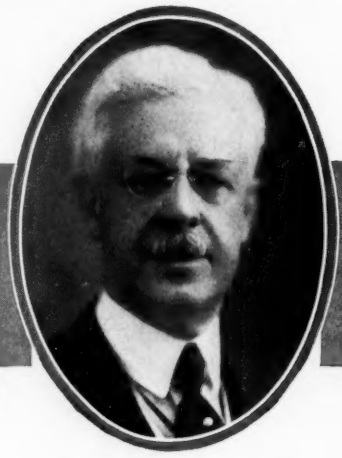

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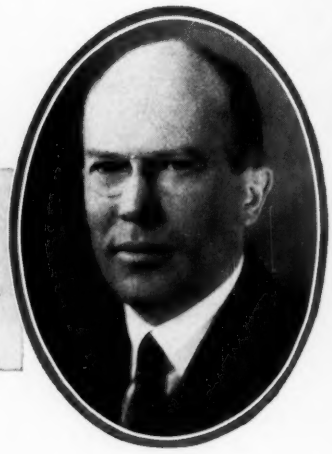

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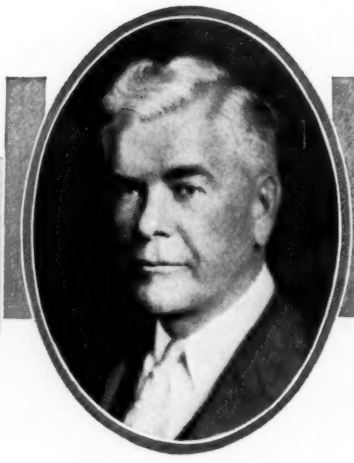

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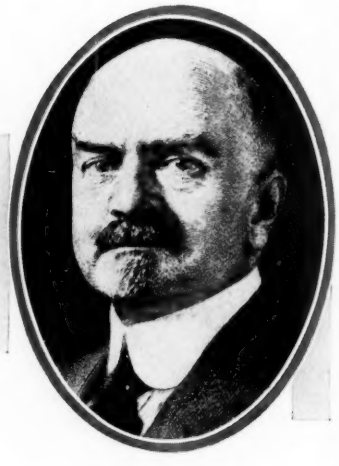

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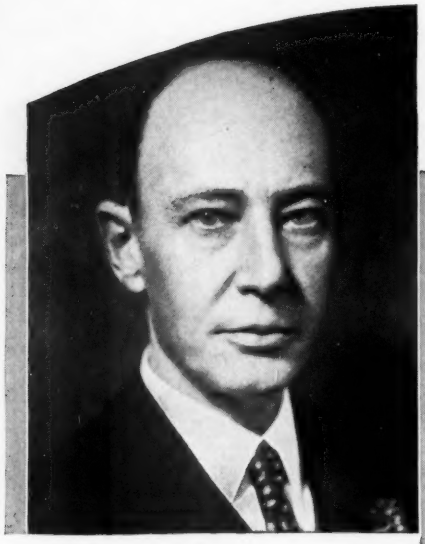

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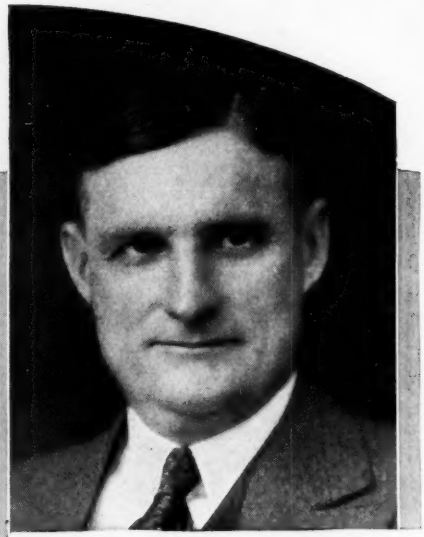

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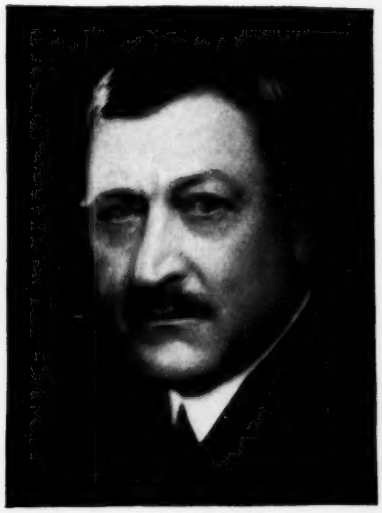

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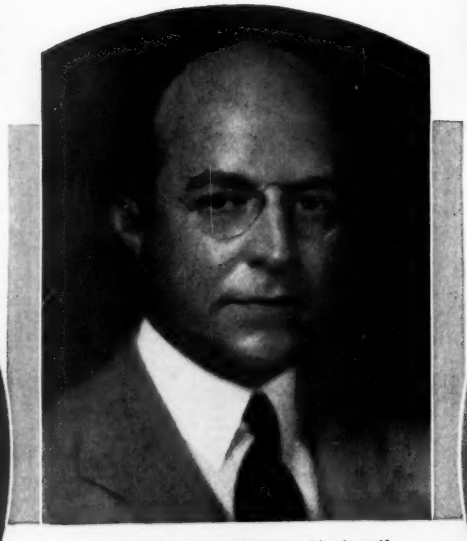

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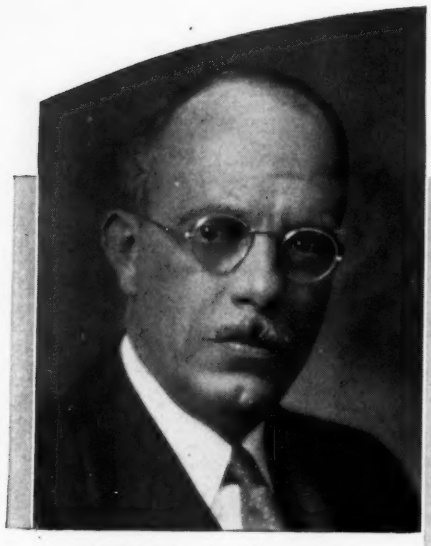

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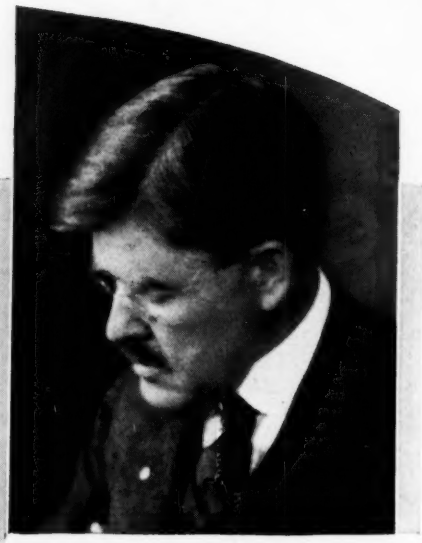

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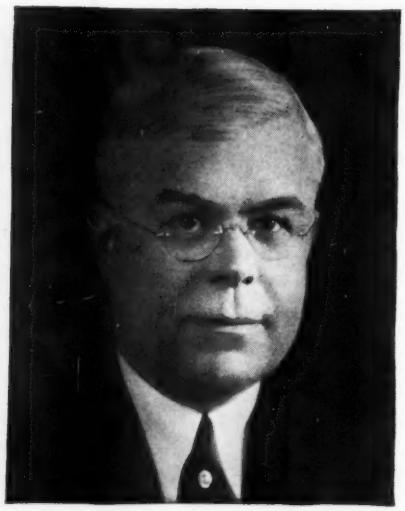

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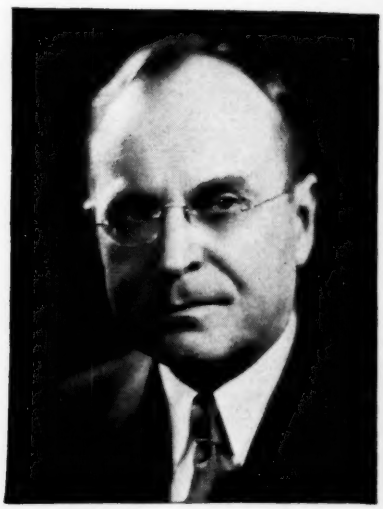

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FOODS THAT COMMONLY DISAGREE WITH PEOPLE

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AND
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Which are the foods difficult of digestion or likely to cause distress of one kind or another? Which are the most likely to cause gas, abdominal discomfort, heartburn, regurgitation, "biliousness" or urticaria? Surely, after thousands of years of cumulative experience, we physicians should be well prepared to answer these questions which are being put to us several times a day; and yet, it does not look as if we were.

Today the average physician, when asked for advice as to diet, is likely to warn against the eating of fried or greasy or rich foods, or of foods that he himself cannot digest; or he will give a printed list, which may fit the needs of his patient about as well as the key to one door fits the lock of another. And if the patient should protest that he is unable to partake of, let us say, milk or eggs, he is likely to be told impatiently that the trouble is in his head and that he must do what he is told. Even the hospital dietitian is likely to insist that milk and eggs are invaluable "health foods" which must be taken every day if disaster is to be avoided; and unless she is an unusually intelligent woman, given to habits of independent thought, or unless she has worked with an allergist, she will not budge an inch from the way in which she was taught to go.

And who can blame her for this when her whole training was built around one idea, namely, that of supplying to her patients, each day, a diet complete enough to insure good growth in a baby rat? In recent decades the leaders in dietetics have been so absorbed in the search for "the little things in the diet" that there has been no time left for consideration of such a minor (?) matter as the digestibility of the foods that happen to carry the desired vitamins or iron or calcium. By digestibility we mean here the likelihood or unlikelihood that the food will disagree in some way with the person who eats it. Some of the books on diet fail even to mention digestibility; others comment briefly on the subject, and one book, written by a practicing physician, has a short chapter on it.

DIFFICULTY OF DISCOVERING OFFENDING FOODS

Another reason for present-day disregard of this item of digestibility in a diet is doubtless to be found in the fact that the attainment of knowledge in this field is difficult. The most intelligent observer can easily be deceived, and the patient may well be mistaken when he states his inability to eat some particular food. Often it was condemned unjustly and on insufficient evidence: perhaps the fish was blamed when really the culprit was the tartar sauce, the cottonseed oil in which the fish was fried, or the pie that was eaten for dessert. Or the food eaten at dinner was blamed when really the offending substance was taken into the body with luncheon or breakfast. Or the upset was due simply to overeating or to back pressure from an overfilled colon, to annoyance over an argument at the dinner table, to an oncoming cold, or even to a slight flareup in an unrecognized cholecystitis. Under the circumstances, surely, no one should reject a food unless it gives trouble repeatedly and at times when other causes for the symptoms can be excluded.

THE ATTITUDE OF THE PHYSICIAN

There appear now to be three courses open to a physician: one, to pooh-pooh all but the severest manifestations of food sensitiveness; another, to look on almost every illness known to man as due to food allergy, and another, to steer his way carefully between the error of operating on a patient with an allergic intestinal crisis and the tragedy of trying to cure with diet a patient with empyema of the gallbladder.

There is no doubt that some half-starved "dyspeptics," dominated by the fear of many foods, can be cured only when, as an experiment, their protests are overridden and they are made to eat; but it is equally certain that others, now badly handicapped, could easily be cured by the complete removal from their diet of one or more foods.

THE CONTRIBUTION OF THE ALLERGISTS

Curiously, in the advance that is now being made it is not the gastro-enterologist or the dietitian who is leading the way, but the allergist. He became interested in diet through his efforts to help persons with asthma, hay fever and skin lesions. First he tried to discover the offending foods with the help of skin tests, but when these often failed him he turned to the method of trial and error, first simplifying the problem by limiting the patient to a few foods, and these chosen from a list of the ones that seldom give trouble.

FOOD SENSITIVENESS NOT ALL ALLERGIC IN NATURE

Perhaps because this new knowledge has come from the allergists it is customary now, when a food disagrees with a patient, to take it for granted that the offending substance was a protein and the mechanism of injury an allergic one. Actually, there is no reason for assuming that even a large number of the patients with whom foods disagree suffer in an allergic way. The trouble does not have to have an allergic mechanism back of it, even when it occurs in persons who suffer with allergic types of disease. Thus one can hardly

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call sulphur dioxide a protein, and yet the inhalation of this substance may throw an asthmatic person into an attack. Similarly, substances such as pepper and mustard and alcohol may well alter peristalsis by direct irritation of nerve endings in the mucosa of the stomach and the intestine. There are reasons for suspecting that cucumbers, melons and tomatoes contain an emetic substance that in small doses produces only regurgitation and belching. Fats can produce distress simply because of their tendency to delay the emptying of the stomach, and flatulence and colicky distress can be due to the presence in some foods of laxative substances which in small doses produce only peristaltic unrest.

Furthermore, the stories that many persons tell are incompatible with the theory that their sensitiveness is allergic in nature. For instance, a woman who usually vomits milk states that she can digest it perfectly when a patented egg-powder is added to it, and two others who regurgitate or vomit cold milk have no trouble when this food is warmed. Many others who say that they are highly sensitive to undisguised egg will eat angel food cake, custard and chicken; and the many who have trouble with boiled cabbage can usually digest cole slaw.

If, as we believe, much of the trouble caused by food is due purely to irritation of the intestinal mucous membrane by chemicals or by woody cellulose, it is easy to see why in so many cases the skin tests are useless. One can expect them to be positive only when the symptoms are due to unchanged protein getting into the blood stream.

It is the severe reaction at a distance from the abdomen that is most likely to be due to foreign protein, but even some of these upsets can be due to small amounts of poisonous drugs, such as the oxalic acid in beet greens, the solanin in potatoes, the powerful hemolysin in raw onions [1] or the laxative substances in rhubarb and prunes.

FOODS THAT COMMONLY DISAGREE WITH THE EATER

But to get back to our original problem: how can we physicians secure information as to the foods that commonly disagree with the eater? Probably the best way would be to list all the foods incriminated in the production of symptoms in hundreds of cases of fairly definite food sensitiveness. Thus, Rowe [2] reported the curing of 175 patients by the elimination from the diet, in order of frequency, of wheat, eggs, milk, chocolate, cabbage, tomato, oranges, walnuts, strawberries, bananas, white potato, cauliflower, oats, pork, carrots, rice, oysters, salmon, celery, lettuce, squash, apricots, apple, cantaloup, grapefruit and peaches.

Rowe's list of skin reactions to food observed in 500 patients is also of interest but probably not so helpful. Most commonly irritating to the skin were wheat, spinach, egg, milk, celery, squash, string beans, corn, cabbage, tomatoes, cauliflower, white potatoes, black pepper, onions, rice, oranges, asparagus, turnips, grapefruit and lettuce.

Vaughan's [3] list is not comparable with Rowe's, because he studied 508 persons living in villages in Virginia and then chose from these the 244 who complained only of symptoms designated by him as being those of "minor allergy." These are nausea, vomiting, heartburn, belching, flatulence, cramps, hives or rashes, headache and the prolonged tasting of food. The foods blamed were, in order of frequency, cabbage, onion, tomatoes, cucumbers, strawberry, watermelon, pork, cantaloup, apple, beans, potato, sea foods, banana and egg.

Obviously, further research is needed, and particularly with large unselected groups of persons. Fortunately there is enough agreement among investigators so that one can now be fairly certain that the commonest offenders are the foods, such as wheat, eggs, milk, chocolate, cabbage, onions, tomato and orange, which are eaten almost every day. It is this very fact that they are eaten almost every day that has so greatly retarded knowledge in this field. It is only the unusual patient who, without expert help, can discover that his breakfast cup of coffee or the toast that goes with it are responsible for such mild symptoms as flatulence or a stuffy head.

While waiting for the publication of more studies like those of Rowe and Vaughan, we decided to see what we could learn by questioning several hundred patients as to the foods which they had been forced to give up or which they could eat only with some distress.

THE NEED FOR CARE IN QUESTIONING PATIENTS

Obviously such questioning had to be done with care and discrimination. Too often, cross examination showed that some foods, such as cucumbers, mentioned as indigestible, had really never been touched because of their bad reputation, while other foods had not been touched for years following some occasion when they were blamed, perhaps unjustly, for a digestive upset. Accordingly, we have listed only such foods as were incriminated on what seemed to us to be fairly valid evidence; and whenever the type of answers given by an individual showed a lack of intelligence and judgment, we stopped the questioning and rejected the data already obtained from this source.

It was found necessary also to ask specifically in regard to one food after another, because, time and again, the patient who first said he could eat everything told a different story when his memory was helped by perusal of a list of foods.

Unfortunately, also, patients are prone to blame, perhaps unfairly, the food that is tasted during belching or regurgitation. As W. E. Garrey [4] once pointed out to us, the fat in a meal must tend to gather in a layer, which floats on top of the fluids in the stomach. If onions have been eaten, the odoriferous essence will become dissolved in this layer of fat lying next to the cardia, and every time the person belches he will taste onions and will blame them for an indigestion that may have been caused by something else.

In many cases aversion to a particular food is of psychic origin and due to the patient's association of this food with some particularly unpleasant digestive upset of the past. In some of the persons questioned by us, even the thought, sight or smell of such a food caused nausea or belching. One man told of being nauseated by scrambled eggs, but he can eat them fried or poached; and, as is well known, many who eat cooked eggs cannot bring themselves to touch a raw egg.

We questioned more than 700 patients, most of them complaining of gastro-intestinal troubles, but we

1. Gruhzit, O. M.: I. Anemia of Dogs Produced by Feeding of the Whole Onions and Onion Fractions, Am. J. M. Sc. **181:** 812-815 (June) 1931.
2. Rowe, A. H.: Food Allergy; Its Manifestations, Diagnosis and Treatment, J. A. M. A. **91:** 1623-1631 (Nov. 24) 1928.
3. Vaughan, W. T.: Minor Allergy: Its Distribution, Clinical Aspects, and Significance, J. Allergy **5:** 184-196 (Jan.) 1934.
4. Garrey, W. E.: Personal communication to the authors.

analyze here only the answers given by the first 500 intelligent or fairly intelligent men and women who admitted food sensitiveness and talked sensibly about it. In making some of the tables we were able to use only data from the last 400 records in which we took care to note the nature of the disturbances produced by the different foods.

THE FREQUENCY WITH WHICH SENSITIVENESS TO FOOD OCCURS IN THE GENERAL POPULATION

Before going on to tell how many patients we found sensitive to various foods, we feel we should warn the reader that the percentages given by us must be larger than those likely to be obtained through a study of an unselected group of persons, such as might be found in a restaurant. We dealt with selected patients, most of whom were suffering with indigestion and many of whom were seen by the senior writer because they complained of food sensitiveness or of symptoms that were thought to be due to it. Among those with an apparently functional type of indigestion there was hardly one who did not feel that he was sensitive to one or more foods.

According to Rowe,[5] 31 per cent of 400 university students and nurses were sensitive to food, and, in a house-to-house canvass of 508 villagers in Virginia, Vaughan [3] obtained a corresponding figure of 62.6 per cent. Apparently, then, some idea of the percentages of the general public sensitive to the various foods can be obtained by multiplying our figures by some factor between 0.3 and 0.6. This factor will be the larger, the more intelligent the persons questioned and the more skilled and pertinacious the interrogator.

The physician who may wonder why he so rarely encounters food sensitiveness in his practice should remember that even the man of science tends to see only those things that he has been trained to see or that he is looking for; all else is likely to be missed or ignored or pooh-poohed.

THE MOST COMMON OFFENDERS

In all the lists published here it must be remembered that the frequency of appearance of a food must depend partly on the frequency with which it appears on the table of the average American. Obviously, then, the poor representation in these lists of a food like butter means much more than that quail or pâté-de-fois-gras are not mentioned. This difference in the frequency with which foods are eaten may account for the fact that cauliflower and sprouts do not rank as high in table 1 as does cabbage.

The first thing to be noted in table 1, which sums up all the complaints made against the various foods, is that some of the most commonly eaten ones head the list. One patient in every four or five suffered discomfort after eating onions, apples, cabbage or milk. Certainly it does not look now as if an apple a day would keep the doctor away!

We can abundantly confirm the well known fact that many of the persons who cannot touch raw onions or apples can digest with comfort boiled onions or cooked apples. Curiously, most of the patients who dare not eat boiled cabbage are able to digest cole slaw and sauerkraut. One patient who has violent symptoms after eating boiled cabbage can eat it raw, and another can digest sauerkraut only when it is not cooked.

Another striking fact to emerge is that chocolate is such a common offender; and, what is more, it is often a serious offender. The percentage given in the list should probably be larger, as it seems that a number of the persons who knew only that they must avoid sweets or candy were really sensitive to chocolate. In one case even the smell of chocolate causes sneezing. As will be seen later, this food seems to be the worst offender in cases of migraine.

One of the interesting points brought out by this study is the fact that pie and pastry, which have such a bad reputation, were rarely complained of and hence are not represented in our lists. The commonly despised fats and greasy foods were blamed by many persons, but often this may have been due solely to the fact that they were tasted at the time of belching.

CURIOUS OBSERVATIONS

Curiously, we found one person, a physician, who gets an attack of asthma after eating onions, raw or cooked, but who can eat them if they are first soaked in vinegar. Another patient, who expected his statement to be received with incredulity, maintained that for him cucumbers with the rind on were harmless; it was only when peeled that they gave him distress. Another stated that, for him, the harmful part of the apple was in the peelings.

TABLE 1.—*Foods That Gave More or Less Distress to 500 Persons*

	Per Cent		Per Cent
Onions (usually raw)	27	Corn	7
Milk, cream, ice cream	26	Pickles and sour foods	7
Apples (raw)	26	Bananas	7
Cabbage (cooked)	25	Peanuts	6
Chocolate	18	Oranges	6
Radishes	17	"Sweets"	6
Tomatoes (more often raw?)	15	Spices	6
Cucumbers	13	Cheese	5
Eggs	13	Peppers	5
Fats, greasy and rich foods	12	Salmon	4
Cantaloup	11	"Fruits"	4
"Meat" and beef	11	"Nuts"	4
Strawberries	10	Prunes	3
Coffee	10	Peas	2
Lettuce	8	Potato	2
Dried beans	8	"Coarse foods"	2
Cauliflower	8	Fish	2
Watermelon and "melons"	8	Chicken	2
Pork	7	104 other foods, 1 per cent or less	

It is hard to understand why, in one person, so slightly absorbable a substance as agar should produce stiff and tender fingers. In another person the eating of bran brings pain in the jaw; and in another, a highly allergic girl, even a small amount of hydrocarbon oil, eaten inadvertently in mayonnaise, produces violent abdominal pain.

Seven patients knew that they could bring on attacks of asthma or vasomotor rhinitis by eating certain foods. Three others appeared to have become sensitive to food after cholecystectomy, and we wonder if changes in the flow of bile served to alter the permeability of the intestinal mucosa to intact foreign protein. Another person, however, lost much of his food sensitiveness after cholecystectomy. It is interesting that in several persons the eating of certain foods caused pain typical of cholecystitis.[6]

There were three cases of an ulcer-like syndrome due apparently to the eating of one or two of the following

5. Rowe, A. H.: Food Allergy: Its Manifestations, Diagnosis and Treatment, with a General Discussion of Bronchial Asthma, Philadelphia, Lea & Febiger, 1931.

6. Alvarez, W. C.: "Pseudocholecystitis" Apparently Caused by Food Sensitiveness, Proc. Staff Meet., Mayo Clin. **9**: 680-683 (Nov. 7) 1934.

foods: banana, apple, "meat," cabbage, turnips and milk. In five other cases presenting a deformed duodenum, hunger distress was brought on by the eating of such foods as apple, tomatoes, milk, eggs, radishes, onions, pickles, sauerkraut and spinach. In one case, appendicitis was simulated by the eating of onions.

Eight patients attributed canker sores or sore tongue or burning in the mouth to the eating of certain foods,

TABLE 2.—*Severe Reactions of 500 Patients to Food, with Symptoms Such as Vomiting, Diarrhea or Severe Pain*

	Per Cent	Cases		Cases
Milk, cream, and ice cream	7	34	Peanuts	4
Chocolate	5	25	Pork	4
Apples (raw)	4	19	Strawberries	4
Onions (raw, usually)	3	17	Raw "fruits"	4
Eggs	3	15	Lobster	4
Tomatoes	3	15	Veal	4
Cabbage (cooked)	2	12	Dried beans	3
"Meat," beef and beef fat	2	11	Cucumbers	3
Corn	2	11	Oranges	3
Coffee	2	8	Radishes	3
Bananas	2	8	"Sweets"	3
"Nuts"	1	6	Peas	3
Cauliflower	1	5	"Fats"	2
Cantaloup	1	5	Peppers	2
Fish	1	5	Pickles and sour foods	2
Chicken and chicken broth	1	5	Spinach	2
Watermelon and "melons"	1	5	Oat meal	2
Cheese	1	5	Sauerkraut	2
Lettuce	..	4		

The following foods were each complained of once:

Wheat	Chili peppers	Okra
Potato	Brazil nuts	Vinegar
Butter	Walnuts	Cranberries
Coco cola	Broccoli	Raspberries
Rhubarb	Shrimp	Asparagus
Sprouts	Oysters	Vienna sausage
Eggplant	Crab	Green beans
Mushrooms	Scallops	Garlic
Pepper	Grapes	

and food seemed to be responsible also for joint pains in five persons and for irritation of the bladder in three.

SEVERE REACTIONS

As Vaughan has wisely pointed out, some of the foods that appear high on the list of those that cause trouble are only mild offenders in that the symptoms produced are belching, regurgitation, "tasting" or slight urticaria, which do not greatly inconvenience the victim. Other foods, such as chocolate, shell-fish or eggs, when they do offend are likely to cause such serious trouble that the patient has to consult a physician.

Table 2 shows, in order of frequency with which complaint was made, the foods which produced such a troublesome reaction that the patient was compelled to avoid them. It is interesting to note that milk heads the list, and that seven in 100 persons seen by us were almost unable to touch it. From our figures it appears that perhaps nineteen more in 100 patients consulting a gastro-enterologist will not be able to take it with comfort. Three persons in every 100 questioned by us did not dare to eat eggs.

One of the most interesting observations is that only one person in the 500 questioned knew that he must not eat wheat, and, as we remember, this handicap had been pointed out to him by an allergist. If, then, the allergists are right, and wheat is the commonest of all seriously offending foods, it is apparent that patients, by themselves, practically never discover their sensitiveness to it.

MIGRAINE

A number of patients who suffered with migraine had discovered a relation between their attacks and the ingestion of food; they knew that the eating of certain foods would be followed by headache, but only a few had been able to cure themselves by restricting the diet. Unfortunately, in each case there were other causes at work besides food.

The most interesting feature to be noted in the list of foods complained of by migrainous patients is the fact that it is headed by chocolate. Following chocolate came onions, milk, peanuts, cabbage, eggs, pork, apples, coffee, cucumbers, "meat" and oranges. According to the allergists, the commonest offender in cases of migraine is wheat.

BAD EFFECTS OF FOOD ON THE NERVOUS SYSTEM, OTHER THAN THOSE SEEN IN MIGRAINE

One of the most interesting facts, and one that should be brought forcibly to the attention of the medical profession, is that in many persons the eating of certain foods has a disturbing effect on the nervous system, producing not only headache but such symptoms as nervousness, irritability, sleepiness, dopiness, dizziness, numbness, "queer feelings," cold sweats, feverishness, and perhaps even some mental aberration. One patient seen by us was so benumbed mentally that for many years he was unable to work and spent his time going from one psychiatrist to another. Within a few days after the removal of fish and a few other foods from his diet, "his head cleared" and he returned to work.

One of the most striking examples of what seemed to be a cerebral disturbance due to food was encountered in the case of a husky chauffeur who one evening did his best to eat a freezer-full of strawberry ice cream left over from a party given by his employer. About 2 a. m. his wife woke to find him unconscious and in violent convulsions, which lasted for several hours. Next day there was an eosinophilia of more than 25 per cent. He had never had a convulsion before this

TABLE 3.—*Foods Blamed by 157 Among 400 Patients, Who Complained of Gas, Belching, Flatulence or Distention*

	Per Cent of 157		Per Cent of 157
Onions	36	Strawberries	7
Cabbage	34	Pork	6
Apples	32	"Meat" and beef	6
Radishes	21	Bananas	5
Dried beans	17	Pickles and sour foods	5
Cucumbers	16	Corn	4
Milk, cream, ice cream	16	Peppers	4
Fats, rich foods	13	"Nuts"	4
Cantaloup	11	Salmon	3
Cauliflower	11	Spices	3
Chocolate	11	Cheese	3
Coffee	11	Peas	3
Lettuce	11	Prunes	3
Watermelon and "melons"	10	"Sweets"	3
Peanuts	9	Ginger ale	2
Eggs	8	Sour foods	2
Oranges	8	Sweet potato	2
Tomatoes	8	Beer	2

episode, and he was well for years afterward. Another patient in the group studied was almost freed from epileptiform attacks by the removal of beef from his diet.

Such observations should not be surprising when it is common knowledge among laymen that certain foods, such as cooked cheese, are likely to produce nightmares and restless sleep. Not infrequently the first comment of a patient who responds well to an elimination diet is "my head feels right again."

URTICARIA, RASHES AND ITCHING

Most interesting is the fact that 40 per cent of the patients who were subject to transient attacks of urticaria were unable to incriminate any particular food. As one would expect, strawberries head the list of the foods that were blamed, and after them come tomatoes, eggs, fish, milk, chocolate, meat, pork and oranges. In most of the cases of severe, almost constant urticaria, neither we nor the victim could pin the blame on any food.

TABLE 4.—*Foods Blamed by 98 Among 400 Patients Who Complained of Regurgitation, Lingering Taste or "Repeating"*

	Per Cent of 98		Per Cent of 98
Onions	22	Cauliflower	6
Radishes	20	Strawberries	6
Cantaloup	20	"Meat"	6
Cucumbers	17	Milk	6
Cabbage	15	Chocolate	5
Lettuce	10	Peppers	5
Fats, etc.	10	Bananas	4
Watermelon and "melons"	8	Salmon	3
Apples	8	Celery	3
Eggs	8	Beans	2
Tomatoes	8	Cheese	2
Coffee	7	Nuts	2
Oranges	7	Sweets	2

GAS, BELCHING, ABDOMINAL DISTENTION, REGURGITATION AND HEARTBURN

Table 3 gives the foods that most frequently seemed to be responsible for the production of gas, belching, or distention of the abdomen. It is interesting that onions, cabbage, apples and radishes are to be found listed ahead of dried beans, which are commonly supposed to take first place. It is interesting to find milk in seventh place. It is possible that onions head the list on account of the fact, already mentioned, that when they have been eaten the belcher tastes them.

As one would expect, onions head the list of foods (table 4) that were blamed by patients as producers of regurgitation, usually because they could be tasted for hours after a meal.

It is interesting to note that the foods which were blamed for heartburn were somewhat different from those that were tasted for hours after a meal. This would indicate that the mechanism producing these two groups of symptoms is different. At the head of the list were tomatoes, onions, oranges, apples, radishes, coffee, pork, spices, cabbage and eggs.

ORIGIN OF AND PERIODIC VARIATION IN SENSITIVENESS

In a few instances the patient questioned during this study was able to trace his or her sensitiveness to a period of overindulgence in a particular food. Thus, one man in his student days ate at one sitting 2 pounds of dates left over from a fraternity party and thereby became highly sensitized to this food. Another became sensitized to milk by taking from four to six quarts a day during treatment for tuberculosis. After that, small amounts produced nausea and diarrhea.

As was to be expected, many persons who could not eat full servings of certain foods were able to eat small amounts, or they could eat these foods for one or two days but not for three. One patient who can digest one egg usually vomits when he eats two; another can eat eggs for four days in succession before he begins to regurgitate them; another can drink milk for three days before getting an attack of migraine, and another can drink it for three days before his bowels become loose.

Several allergists have commented on the way in which sensitization comes and goes, so that at times the patient can eat a certain food with impunity and at other times it will make him sick.[7] One of the patients studied by us has difficulty in digesting some foods only if she exercises after the meal.

TWO FACTORS COMBINING TO PRODUCE UPSETS

Some observations recently made indicate also that two sources of irritation, both constituting subliminal stimuli, may combine to produce serious trouble. Thus a woman of our acquaintance who is insensitive to wheat during the winter can avoid severe hay fever in the summer by excluding this food from her diet. Another patient becomes wheezy on exercising only if he is eating wheat.[8]

Similarly, fatigue, nervousness and psychic strain can at times so injure, perhaps, the absorptive power of the intestine that a food which ordinarily would cause some flatulence will produce violent diarrhea and mental dulness.

A LIST OF FOODS THAT SELDOM OFFEND

Once the most common offenders are well known, a complementary list of probable nonoffenders can be made, and this can then be used as the starting point of investigations into the food sensitiveness of individuals.[9]

Unfortunately, the list presented here cannot have great value until the foods on it have been tested by many patients. As we said before, the fact that a particular food is not found in tables 1 or 2 of this paper may mean simply that it is seldom eaten by persons living in the North Central states.

TABLE 5.—*Number of Complaints Lodged Against Each Food During an Investigation of 400 Patients (Not Percentages)*

	Total No. of Complaints	Vomiting, Diarrhea	Gas, Belching	Heartburn	Regurgitation	Headache
Onions	120	15	56	10	22	10
Milk, cream, ice cream	114	27	25	3	6	5
Apples	107	15	50	7	8	2
Cabbage	101	12	54	4	15	3
Chocolate	76	19	17	2	5	14
Radishes	75	3	33	5	20	1
Tomatoes	58	11	12	12	8	1
Cucumbers	56	2	25	1	17	2
Eggs	56	10	12	3	8	3
Fats, rich foods	51	2	21	3	10	2
Cantaloup	51	5	17	2	20	0
"Meat" and beef	44	7	9	1	6	2
Beans (dried)	41	3	27	0	2	0
Watermelon and "melons"	38	5	15	2	8	0
Strawberries	38	4	11	1	6	0
Coffee	37	5	17	5	7	2
Cauliflower	34	5	17	0	6	0
Pork	33	4	9	4	0	3
Lettuce	30	1	17	1	10	0
Corn	29	9	7	0	0	1
Bananas	29	8	8	3	4	1
Pickles and sour foods	29	2	8	3	1	0
Oranges	26	3	12	10	7	2
Peanuts	25	2	14	1	1	4
Spices	22	0	5	4	1	1
"Sweets"	21	3	4	3	2	0
Nuts (various kinds)	21	2	6	0	2	0

7. Rowe: Food Allergy,[5] p. 29.

8. An introduction to some of the literature on this phase of the problem is given by Gelfand, H. H.: Extra-Pollen Hypersensitivity—An Important Consideration in the Treatment of Hay Fever, Am. J. M. Sc. **182**: 81-86 (July) 1931.

9. Such a list may be found in Rowe, A. H.: Food Allergy;[5] Revised "Elimination Diets" for the Diagnosis and Treatment of Food Allergy, Am. J. Digest. Dis. & Nutrition **1**: 387-392 (Aug.) 1934, and Vaughan, W. T.: The Diagnostic Program in Food Allergy, Am. J. M. Sc. **182**: 459-467 (Oct.) 1931.

Fortunately for the student of food sensitiveness, when a patient is markedly sensitive to one of the foods seldom eaten he is usually aware of the fact and can warn his physician not to include it in his first elimination diet. Presumably also the foods seldom used are the least likely to get into the blood in such large quantities as to produce sensitization.

For a supply of protein, the deviser of an elimination diet will depend largely on lamb and gelatin. Oysters and scallops might perhaps be added occasionally, because if the patient is sensitive to these foods he will probably know it.

The best fat is probably butter. If well washed, it can usually be eaten even by persons sensitive to milk.

Among carbohydrates, the most useful appear to be cane, beet or maple sugar and rice. Trial may be made also of rye, barley and arrowroot. Tapioca and sago might be more useful if they could be prepared tastily without milk and egg. Some persons who are moderately sensitive to wheat can eat a little highly dextrinized, thin toast or zwieback. Lima, soya or string beans might be useful, especially as they contain needed protein. Perhaps cooked apple would be harmless in most cases. Pineapple juice might also be tried.

For vegetables, the patient will try perhaps beets, asparagus, peas, Irish or sweet potato, egg plant, turnips, parsnips, pumpkin and artichokes. For fruits he may try cooked pears.

Tea rarely seems to give trouble. Occasionally a person who is somewhat sensitive to milk will take with comfort buttermilk, boiled, dried or curdled milk (junket) or cottage cheese. There is evidence to show that the lactalbumin of milk can be changed and rendered harmless by heat.

Usually a patient is kept on a narrow elimination diet for so short a time that no one need feel worried because it is not well balanced and not full of vitamins and salts.

ELIMINATION DIETS

In some ways the ideal elimination diet would consist of no food at all. If the symptoms continued during a fast, it would be obvious that foods were not at fault. If, however, the symptoms disappeared, foods could be tested singly, one after the other, until all were classified as harmless or hurtful.[10]

In order to spare the patient the annoyance of fasting, and in order to conserve weight and strength in the weak and the thin, it is customary now to give, at the start, a few foods that are not likely to cause trouble. When relief follows, the search for the offending food is then fairly easy. If relief does not follow, the physician must fear either that one or more of the foods in the basic elimination diet used is an offender or else that the disease is not due to the eating of food.

Physicians will find that the much traveled and intelligent "dyspeptic" will usually welcome enthusiastically this idea of searching for the offending foods. He is sick and tired of diets imposed ex cathedra, and he is much impressed with the logic underlying the new idea.

SUMMARY

Patients who ask for dietary advice usually get either indefinite or inadequate or antiquated information, or else a ready-made formula or list which may or may not fit their individual needs and idiosyncrasies. Unfortunately, today, most textbook writers and many dietitians are so concerned with the vitamin content of foods that they ignore the matter of digestibility and refuse to make allowances for individual weaknesses.

Unfortunately also it is not easy for the physician to get trustworthy information as to the likelihood or unlikelihood that a given food will disagree with the eater.

The allergists have contributed much toward a solution of this problem. They are finding that the commonest offenders against health and comfort are the foods most commonly eaten, such as wheat, milk, eggs, chocolate, cabbage, tomatoes and oranges.

Not all food sensitiveness is on an allergic basis. There appear to be many druglike substances in food that can cause irritation of the bowel or even disturbances at a distance from the abdomen. The largely indigestible cellulose in many foods is another factor in causing discomfort.

This paper is based on answers obtained on questioning 500 patients of fair or good intelligence who were for the most part complaining of indigestion. They were asked about the foods that they could not eat or could digest only with discomfort. With the exception of wheat, which was mentioned once, the foods complained of were those already incriminated by students of allergy. Many of the patients suffered after eating onions, apples, cabbage or milk. Other common offenders were chocolate, radishes, tomatoes, cucumbers, eggs, fats, cantaloup, beef, strawberries, coffee, lettuce, dried beans, cauliflower, melons, pork, corn and pickles.

Because most of the persons studied were seen because they were suffering with indigestion, the percentages given here must be considerably higher than those obtainable in an unselected group of persons.

Seven patients in 100 were unable to drink milk because the distress produced was so severe; three in 100 could not eat eggs.

A number of patients with migraine had recognized a connection between the headache and the eating of certain foods such as chocolate, onion, milk, peanuts, cabbage and eggs.

Food can at times produce mental depression, dopiness, and a number of curious sensations in the head.

Transient urticaria was commonly ascribed by the patients to the eating of strawberries, tomatoes, eggs, fish, milk and chocolate. Constant urticaria seldom seemed to be due to food.

Onions, cabbage, raw apples, and radishes were rated above Boston beans as makers of gas. Milk also was a common offender.

Two factors may combined to produce symptoms in some persons, one coming from food and another perhaps from pollen, dust, fatigue or emotion.

A list has been made of the foods that are seldom mentioned by patients with indigestion. These foods, which are probably fairly innocuous, can be used as a basis for the "elimination diet" with which the physician and patient can narrow down their search for offending foods. The substances suggested for trial are lamb, gelatin, butter, sugar, rice, rye, barley, arrowroot, tapioca, sago, lima or soya or string beans, cooked apple, pineapple juice, beets, asparagus, peas, Irish or sweet potatoes, eggplant, turnips, parsnips, pumpkin, artichokes, cooked pears and weak tea.

The idea today is not to warn only against greasy foods or to hand out a ready-made diet list but to fit a diet to the individual. Often by such study it can be shown that the nature of the diet has nothing to do with the indigestion complained of.

10. Alvarez, W. C.: Ways of Discovering the Foods That Are Causing Indigestion, Proc. Staff Meet., Mayo Clin. **7**: 443-446 (June 27) 1932.

CENTRAL FRACTURES OF THE NECK OF THE FEMUR

AN ANALYSIS OF THE END RESULTS

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A great deal of confusion still exists in regard to the results obtained in the treatment of central fractures of the neck of the femur. This is unquestionably the result of a lack of uniformity in the methods of compiling the statistics and explains the otherwise impossible disparity in the published results, which vary from 20 to 90 per cent in which bony union is obtained. In other words, for figures to be of value one must know exactly how the cases were selected, under what circumstances they were treated and on what criteria the assumption of bony union was determined.

It is fairly well conceded that the reports of end results in central fractures of the femoral neck which are properly and accurately compiled average about from 55 to 60 per cent solid bony union.

My colleague Dr. Willis C. Campbell has recently compiled an analysis of all our fractures about the hip joint. In this classification of true central fractures of the neck of the femur, excluding impacted or incomplete fractures, the end results showed 53.3 per cent solid bony union. These cases were all treated by the Whitman method and were personally observed for a minimum period of two years. The mortality was 12 per cent. These figures correspond with other published results.

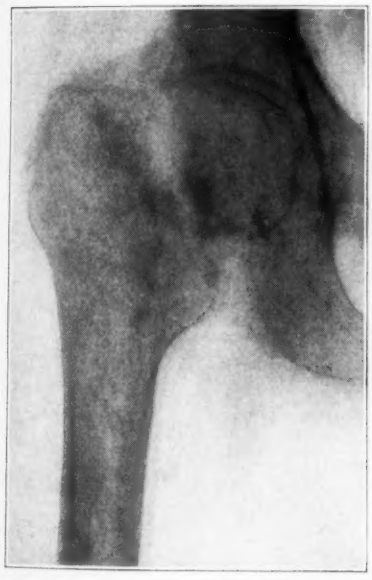

Fig. 1 (case 1).—Mrs. S. R. D. had a central fracture of the neck of the femur, ununited, of five months' duration. The illustration shows a head with corresponding atrophy in the head and trochanteric region, indicating a living head. (In the illustrations it has been extremely difficult to reproduce the contrast in density between the heads and trochanteric regions, which is clearly evident in the original roentgenograms.)

In view of the work that has come out in the last ten years, especially the articles of Phemister and of Santos regarding aseptic necrosis of the femoral head following fracture of the neck of the femur, it was thought that a study based on these facts might give interesting data regarding the cause for the high percentage of nonunions. Consequently a series of 100 acute complete central fractures of the neck of the femur adequately treated and traced to a final determination as regards union or nonunion was selected. Incomplete or impacted fractures, and those cases in which death occurred or which were lost sight of, were discarded.

Basing conclusions on the evidence afforded by the roentgenograms, I made an effort to divide the series into those in which the head remained viable and those in which it became necrotic and to determine, if possible, the bearing this had on union or nonunion.

Roentgenologic and histologic study of the femoral heads removed during reconstructive operations in cases from this series and from other cases will be used to illustrate and confirm the conclusions drawn.

A tabulation of the results in this series showed 52 per cent solid bony union and 48 per cent nonunion.

There has been a great deal of controversy regarding the causes of nonunion in fractures of the neck of the femur; the more common explanations given may be discussed under the heads of improper or incomplete reduction, insufficient immobilization and aseptic necrosis of the femoral head.

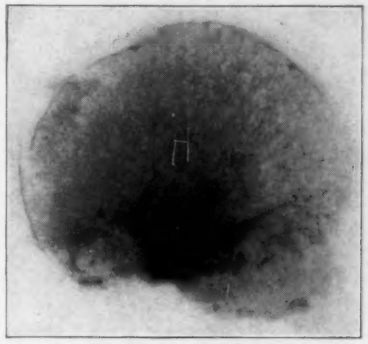

Fig. 2 (case 1).—Head removed at reconstruction operation, showing symmetrical atrophy.

IMPROPER OR INCOMPLETE REDUCTION

There is no question that improper or incomplete reduction is a common cause of nonunion in cases improperly treated. It cannot be considered as an important element in this series, however, as the cases were all treated by the Whitman method which, in the hands of those accustomed to its use, is generally conceded to effect an accurate apposition of the fractured surfaces. The reliability of this statement is substantiated, both by the postreduction roentgenograms in the closed cases and by the visual demonstration, which may be obtained in those cases treated by open reduction. We have operated on a number of acute fractures recently for the purpose of using some type of internal fixation. In each of these cases the Whitman manipulation has been carried out with the head and neck under direct vision and it is very comforting to see the accuracy of the reduction and to know that certainly in the average case there is sufficient apposition of the fractured surfaces to permit bony union. The introduction of the lateral views of the hip, the technic for which has recently been perfected, is a further check and help in closed reductions.

INSUFFICIENT IMMOBILIZATION

There is unquestionably some motion permitted between the fragments in a fractured hip, even in a double spica cast. This is particularly true in obese patients after the cast has become loose. How seriously this affects the apposition of the fragments and the formation of callus can be judged by the number of cases in which the roentgenogram shows displacement immediately after removal of the cast. It has been our experience that, in those cases in which the head is living and in which union is progressing satisfactorily, the position is almost uniformly held satisfactorily. In those cases in which apposition has been lost it will usually be shown, either at the time or subsequently, that other factors such as necrosis of the head and absorption of the neck account for the displacement. Again it is a common observation to find excellent apposition of the fragments on removal of the cast, which later is lost when immobilization is removed. Here the cast has maintained position in spite of the fact that union has not occurred.

Consequently, while incomplete reduction and inefficient immobilization may account for a small percentage of the cases treated by the Whitman method, one must look further for the fundamental cause producing such a high percentage of nonunions.

ASEPTIC NECROSIS OF THE FEMORAL HEAD

A careful roentgenologic study of the femoral heads in sixty cases of nonunion, and microscopic studies of

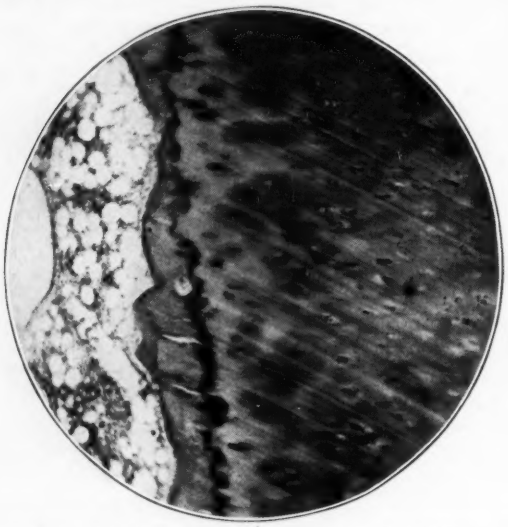

Fig. 3 (case 1).—Section showing junction of the articular cartilage with the medullary cavity. Both the cartilage and the cells in the medulla are living.

those heads available, lead to the very definite conclusion that the vast majority of nonunions are the result of an aseptic necrosis of the femoral head. Deprived of the major portion of its blood supply, it does not receive sufficient nourishment to maintain the viability of its cellular elements.

Clinical recognition of the fact that the femoral head undergoes necrosis following central fractures of the femoral neck dates back to the time of Sir Astley Cooper, approximately 100 years ago. Kocher in 1896, basing his conclusions largely on clinical observation, stated that in all fractures of the femoral neck the head became necrotic.

It has been only in the last ten years that the earlier clinical observations regarding the process of aseptic necrosis have been placed on an accurate scientific basis and that a complete pathologic description of the process of necrosis with subsequent revascularization and substitution has been given.

Schmor, Hesse and Bonn were among the earlier investigators to describe the process of secondary revascularization. Phemister has recently contributed valuable studies on the general subject of aseptic necrosis. The comprehensive article of Santos, which was published in 1930, reviews the entire subject and, using the data gathered from the study of a series of femoral heads removed at autopsy or operation, clearly describes the entire pathologic process, correlating the clinical, x-ray and microscopic changes.

In attempting to estimate the number of heads in this series which became necrotic, it was necessary to rely almost entirely on the x-ray evidence, as in only a few cases were the heads obtained for microscopic study. It is realized that even though the roentgenograms were all taken at the same place with a routine technic there still remains a probable percentage of error due to the element of personal equation in interpreting the comparative density of the femoral head and the adjacent bone. It is on this variation in density that distinction between the viable and the necrotic heads is made.

It is frequently impossible to determine the viability of the head from a single film, but in most instances, if the cases are followed over a sufficient period of time with successive roentgenograms, a very definite decision can be reached.

In every case in which it has been possible to check the x-ray reading with the microscopic examination of the head, they have been found to coincide. Based on the roentgenologic evidence, it was found that the head was necrotic in 34 per cent of this series of 100 acute fractures of the femoral neck. In thirty cases nonunion occurred. Granting that the average series reported will show 40 per cent of nonunions, it is apparent that approximately 75 per cent of our nonunions can be explained on the basis of aseptic necrosis of the femoral head.

SOLID BONY UNION WITH VIABLE HEAD

Cases that are progressing to a solid bony union with a viable head show definite characteristics at the end of the routine three months period of cast immobilization. Roentgenograms show the normal relative position of the head and neck to have been maintained. The density of trochanter, neck and head are approximately the same, each having undergone the usual physiologic atrophy that characterizes bone with a normal blood supply.

At this time it should be possible to form a fairly definite idea as to the probable prognosis in each case. Variations from the normal should be viewed with apprehension. It is true that some cases will go on to solid union after slight displacement of the fragments or after absorptive changes in the neck, but they are unusual. Even though perfect anatomic alinement has been maintained, definite contrast in density between the head and the distal neck fragment and trochanter should make the prognosis guarded. There have been a number of such cases in this series in which the head proved to be necrotic, the apparent union disintegrating as soon as immobilization was removed and a typical nonunion resulting.

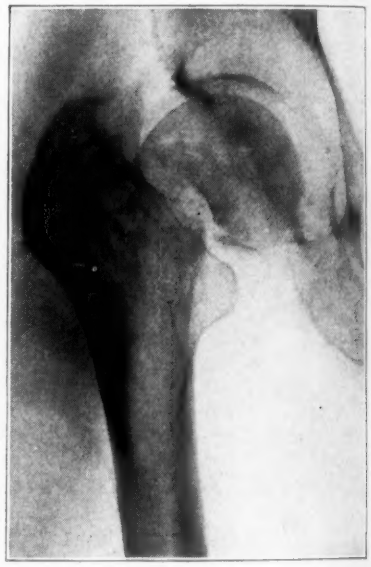

Fig. 4 (case 2).—Mr. H. B. G. had a central fracture of the neck of the femur, with nonunion of nine months' duration, with aseptic necrosis of the head. The trochanter and acetabulum show normal physiologic atrophy, producing a definite contrast in density with the head, which has retained its original density.

Definite evidence that bony union has taken place is first shown by the reformation of the lines of force extending from the neck across the fracture line into the head. If the normal anatomic relationship between

the head and the neck has been maintained, these lines assume the same location and arrangement as those of the normal hip; but if the neck has become shortened or a coxa vara deformity has occurred, these reinforcement lines will follow the lines of greatest mechanical force.

The final evidence of union is shown by a gradual recalcification of the head, neck and trochanter as function and weight bearing are resumed.

Forty-eight per cent of this series obtained solid bony union with viable head.

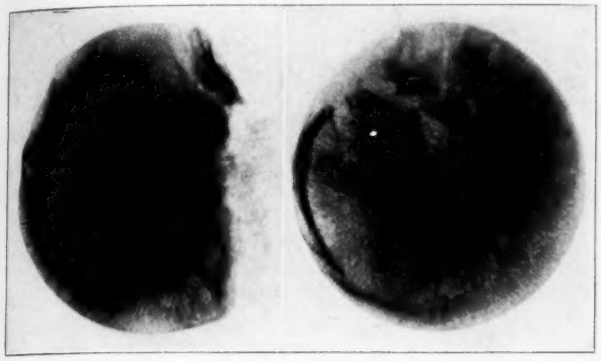

Fig. 5 (case 2).—Aseptic necrosis of head. The normal density has been retained except for small areas of early replacement changes.

NONUNION WITH LIVING HEAD

In improperly treated cases, nonunion in the presence of a viable head is a common occurrence. It is easily explained by failure to secure or maintain apposition of the fragments.

That it is relatively infrequent in cases treated by the Whitman method is clearly shown by the fact that only 7 per cent of the cases in this series showed nonunion with a living head. Here again the conclusions were based on x-ray evidence, only one living head having been available for microscopic study.

If the head, neck and trochanter showed a uniform decrease in density, or if the head showed a regular symmetrical atrophy, as shown by successive roentgenograms during the first six months following the fracture, it was considered viable.

The accuracy of the x-ray deductions is supported by the fact that the one head removed showed unchanged marrow cells and living bony trabeculae in the microscopic sections, and that in two other cases union was obtained following bone grafting.

Bony union associated with a necrotic head occurred in 4 per cent

It is clearly evident, both from cases observed in this series and from those reported by other authors, that union may and does take place between the living distal fragment and a necrotic femoral head. Axhausen explains this by the formation of a bridge of connective tissue and callus extending from the distal fragment across the fracture line and into the necrotic head. The head later undergoes revascularization and eventually replacement by newly formed bone and cartilage.

Santos states that "in none of the cases here reported was there any evidence, either histologic or roentgenologic, that the new bone formed in connection with the blood vessels entering the head by way of the fovea played any part in the healing of the fracture."

It must be concluded, then, from the evidence at present available that union under such conditions is entirely the result of an outgrowth of living elements from the distal fragment that invade the necrotic tissues of the head. This new growth or bridge consists at first of the same young connective tissues and blood vessels seen in the early substitution of the head. Later new living bony trabeculae grow out from the distal portion of the neck, crossing the fracture line and extending up into the head.

Santos reports a case of an impacted fracture of the femoral neck which came to autopsy four weeks after the injury, in which histologic sections taken across the fracture line showed new bony trabeculae extending from the distal portion of the neck into the necrotic trabeculae of the head.

It does not seem improbable that they may here blend with the new bone formed in the process of substitution of the necrotic head.

It must be assumed that in such cases, if one is to obtain a satisfactory functional result, a complete substitution must be made for the necrotic head, which must be replaced by living bone and cartilage. Otherwise degenerative changes with subsequent erosion and fragmentation of that portion of the head which is not so replaced will occur on the resumption of weight bearing.

With present knowledge and methods of observation, it is impossible to determine when this process of substitution has progressed sufficiently to allow the resumption of function. It is probable that in many cases it never does occur and that years after unquestionable bony union has taken place between the neck and the necrotic head trophic changes with complete disintegration of the head may occur. This is illustrated by the following two cases:

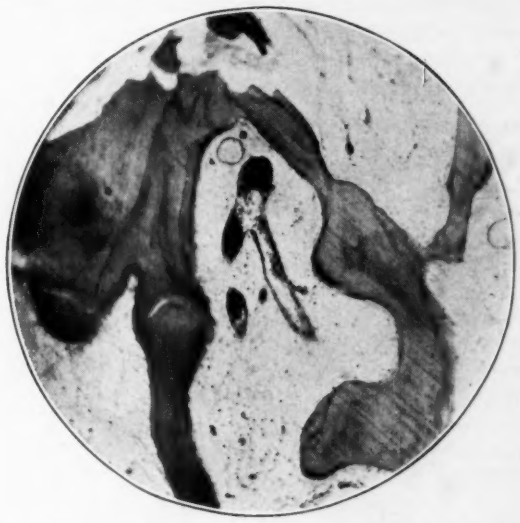

Fig. 6 (case 2).—Section showing characteristic aceptic necrosis of the head with early replacement changes. Normal marrow cells have disappeared, being replaced here and there by early fibrous tissue with some new blood vessels. The bony trabeculae are necrotic.

Two and one-half years after a fracture of the femoral neck, unquestionably ununited, the patient returned because of pain in the hip. She had been walking without support for two years. Roentgenograms showed the old fracture united in good position but with degenerative changes throughout the head and beginning disintegration.

Another patient, Mrs. C. C. J., had a fracture of the femoral neck, which apparently united normally except for a persistent

contrast in density between the head and the trochanter. She resumed walking and, except for occasional pain in the hip, was free from symptoms for four years; at the end of this period she returned because of disability in the hip. Roentgenograms at that time showed complete disintegration and fragmentation of the head. The union in the neck remained solid.

Union with a necrotic head is of relatively infrequent occurrence, being present in only 4 per cent of this series. In these cases the x-rays showed persistent con-

Fig. 7 (case 3).—Mrs. T. L. D., illustrating impacted or incomplete fracture eventually resulting in nonunion with a necrotic head. *A*, original appearance at time of fracture, showing incomplete fracture without displacement. *B*, four months later, showing definite contrast in density between atrophic trochanter and the necrotic head, which has retained its original density; normal position of the fragments has been maintained. *C*, sixteen months after injury, showing typical nonunion with displacement of the fragments and a necrotic head.

trast in density between the head and the trochanteric region. Later irregular areas of decreased density appear in the head, indicating beginning substitution. This may progress throughout the head, or disintegrative changes with fragmentation may supervene, destroying all or part of the head.

NONUNION ASSOCIATED WITH NECROTIC HEADS

It is usually possible at the end of the three months period of cast immobilization to determine by the roentgenographic appearance whether the head is necrotic or viable. In this series of 100 acute fractures the contrast in density between the head and the trochanter was sufficiently clear in twenty-four cases after three months to warrant the conclusion that the head was necrotic. The contrast in density is first evidenced as an absorption of the lime salts in the distal portion of the neck and the trochanteric region. Having an adequate blood supply, this portion of the bone undergoes the normal physiologic atrophy of disuse. The head, deprived of its blood supply, does not show in this atrophy, retaining approximately the same density that it presented at the time of fracture. Subsequent roentgenograms showed that all but two of these cases resulted in nonunion.

In eleven cases a definite conclusion could not be drawn from the roentgenogram at three months. Eight of these subsequently proved to be necrotic, six resulting in nonunions.

In a number of cases in the nonunion group the normal anatomic relations between the fragments was maintained for months after immobilization had been removed. The apparent union disintegrated only when direct weight bearing was begun.

Relying solely on the maintenance of position, one would have been greatly deceived as regards the prognosis in such cases. However, a careful study of the roentgenograms invariably revealed an increasing contrast in density and usually beginning substitutive changes in the heads. In no case did the lines of force reform across the fracture line.

It has been stated by Santos that the process of revascularization and substitution of the necrotic heads begins within the first month and is usually evident in the roentgenogram at three months, but in some cases the process is much delayed and may not occur for years.

Studies of the heads in this series are entirely in accord with this statement. The majority did not show definite substitution, as shown by the x-rays, under six months; in many it was not present until one year. In some old cases seen because of disability from nonunion, heads have been observed which maintained their original density for four or five years.

The period of time that the necrotic head retains its appearance of uniform density depends on the rapidity of secondary revascularization and replacement of the necrotic bone elements by newly formed fibrous tissue and living bony trabeculae.

When the head is detached from the distal fragment the first evidence of replacement usually appears around the fovea and is produced by an ingrowth of blood vessels and young connective tissue, either from the vessels of the ligamentum teres or from a pannus-like growth of connective tissue, which covers the outer surface of the articular cartilage and enters the head by way of the fovea. The same pannus covers the fractured surface of the neck and begins an invasion of the necrotic head from this location.

Revascularization and replacement of a necrotic head is shown in the roentgenogram by irregular areas of decreased density, which increase in size as the process continues until the greater portion of the head may be replaced by living tissue, which differs little in density from the living atrophic head. It can usually be dis-

Fig. 8 (case 4).—Mrs. C. C. J. had a complete central fracture of the neck of the femur, adequately treated, resulting in solid bony union with a necrotic head, which later completely disintegrated on resumption of weight bearing. This case shows that, even though union may be obtained with a necrotic head, subsequent degenerative changes may occur unless the head is completely revascularized and replaced. *A*, complete central fracture of the neck of the femur with the usual displacement of the fragments. *B*, one year after injury: solid bony union with normal relation of the head and neck fragments; also, atrophic changes in the trochanter and neck with retention of the original density in the head, indicating union with a necrotic head. *C*, six years after fracture; complete disintegration and fragmentation of the head.

tinguished from the living head, however, by the fact that the structure of the living head is much more regular, but in some old cases this distinction is impossible.

Microscopic sections have been made on nine femoral heads removed at operation, some of which are cases included in this series. Eight of the heads were necrotic and one was viable. The changes seen in these heads corresponded accurately to the roentgenographic appearance and in each case corroborated the preoperative diagnosis as regards the viability of the head. The pathologic changes were the same as those described by Santos and will not be repeated here. With the roentgenologic evidence as a basis for conclusions, it is possible to state from this series that one may expect approximately 35 per cent of the femoral heads to become necrotic following central fracture of the neck of the femur. Thirty per cent will result in nonunion.

Assuming that failures in the average reported cases are 40 per cent, it is possible to explain 30 per cent, or 75 per cent of the nonunions, on the basis of aseptic necrosis of the head. This is a factor over which one has no control with present methods of treatment and must remain as an irreducible minimum unless some method is discovered of reestablishing or improving the blood supply to the head.

It is possible that some of the recent methods of open reduction and internal fixation used in the acute fractures may accomplish this by a more accurate and constant coaptation of the fragments, a reestablishment of circulation being permitted before necrosis of the head occurs. Knowledge gained in the treatment of the acute fractures is a valuable guide in determining the type of operation to be employed in cases of definitely established nonunion.

If the head is viable, union may be induced and a satisfactory functional result obtained in many cases by a bone graft or some other method of internal fixation, even years after the fracture.

Smith-Petersen reports a remarkable case in which union was obtained by means of a nail ten years after the injury.

Practical experience has shown that in the presence of a necrotic head it is difficult to restore union by bone grafts or any other method of internal fixation. Such operations result in failures almost as a routine, either because of failure to induce union or because of degenerative changes appearing later in the head.

It is apparent, then, in cases of nonunion with necrotic head, that a reconstruction operation offers the patient the best prognosis.

869 Madison Avenue.

Flying in the Face of Nature.—The point of view that plants and animals including our own bodies are nature's wholes which have evolved in relation to each other can help us in grasping two important facts. One is that we are "flying in the face of nature" and shutting our eyes to one of the plainest implications of the evolutionary point of view when we take our nourishment too largely in artificially refined forms—in forms from which we have rejected parts of those wholes to which we are attuned by evolution. And the other of these facts is that if we plan our dietaries to meet all our known nutritional needs and meet these by the use of reasonably natural foods, these, as nature's wholes of the kinds to which our own bodies have been adjusting themselves throughout our evolutionary history, will almost certainly furnish any substances which may be essential to our nutritional well being though still scientifically unknown to us. This is not to suggest a return to nature but only an intelligent application to the problem of food and health of one of the simplest and most fundamental implications of the general evolutionary and scientific point of view of today.—Sherman, H. C.: Food and Health, New York, Macmillan Company, 1934.

CORONARY THROMBOSIS

FOLLOW-UP STUDIES WITH ESPECIAL REFERENCE TO PROGNOSIS

WARREN B. COOKSEY, M.D.
DETROIT

A more convincing physiologic experiment could scarcely be devised as illustrative of the recuperative power of the human heart than the restoration of cardiac function following acute coronary occlusion. That it is possible for the human heart to reestablish its intrinsic blood flow, both through collateral vessels and through channels other than the coronary tree, is now well established and undoubtedly is an important factor in aiding recovery in cases of cardiac infarction. Allbutt,[1] Wearn,[2] Scott[3] and others have reported cases of complete occlusion of the coronary orifices from syphilitic aortitis in which no serious myocardial change was present. In these cases a gradual occlusion of one or both coronary orifices over a period of months was so completely compensated for that the patients were able to continue their daily work with comparative ease. It is quite apparent, therefore, that if the initial shock of acute cardiac infarction is not too great and the first few weeks are survived, many patients will recover so completely and the coronary circulation will so thoroughly reestablish itself in time that many useful years will remain to the individual. Such an optimistic outlook for cardiac infarction is, however, not very general among the medical profession and, it seems to me, is badly in need of emphasis.

TABLE 1.—*Duration of Condition in Thirty-Two Living Patients (61.4 Per Cent of Total)*

Average age at onset of all living cases, 54.2 years		
Time Since Initial Attack	Number of Cases	Total Living, per Cent
13 years	1	3.1
6 years	10	31.3
5 years	2	6.2
4 years	5	15.6
3 years	5	15.6
2 years	2	6.2
1 year	7	21.9

The basis for this study and for the preceding note of optimism is a series of private cases seen over a period of seven years. No case has been used which did not show positive evidence of infarction, with clinical and electrocardiographic data to substantiate amply the diagnosis. Very mild or questionable cases have been rejected. In all, fifty-three cases have been studied.

In table 1 are shown the living patients grouped according to the time that has elapsed since the initial attack. A few details warrant further elaboration. In the thirteen year group, one case is listed. This man, a real estate operator, suffered a most severe infarction at the age of 61 and during the past four years has had occasional mild attacks of acute pulmonary edema following moderately strenuous exertion. However, in the thirteen years elapsed, he has continued steadily to earn his livelihood, drives his own car and goes up and down stairs without discomfort.

From the Freund Clinic.
Read before the Central Society for Clinical Research, Chicago, Nov. 3, 1934.

1. Allbutt, T. C.: Diseases of the Heart, Including Angina Pectoris, London, Macmillan Company **2**: 21, 1915.
2. Leary, Timothy, and Wearn, J. T.: Two Cases of Complete Occlusion of Both Coronary Orifices, Am. Heart J. **5**: 412 (April) 1930.
3. Scott, R. W.: Syphilitic Aortic Insufficiency, Arch. Int. Med. **34**: 645 (Nov.) 1924.

In the six year group, ten patients are living. Of these, seven are well and have been restored to their previous occupation. Of the three not working, one is a man, aged 75, who has diabetes and tabes but absolutely no cardiac difficulties. The second is a retired physician, aged 70, who is able to walk long distances and who, two weeks ago, was sufficiently well to remove an old stump from the grounds of his summer cottage. It is of interest that he worked for nearly three hours with ax, pick and spade, and in his own words was wringing wet with sweat but hadn't a single symptom referable to his heart. The third of the inactive patients in this six year group has become a chronic invalid at 55, more functionally ill than otherwise. During the six years she has had a thyroidectomy for adenoma, a cholecystectomy for common duct obstruction and numerous hospital entries for various minor complaints. She walks stairs as desired, however, and does not suffer significantly from her heart. I will not detail further the patients in this group, but the foregoing four cases are representative and illustrate very well how much a restoration may be expected in some cases.

TABLE 2.—*Status of Living Patients*

Status	Number	Per Cent
Living patients who have retired	7	21.9
Living patients restored to previous occupation	25	78.1
Living patients without symptoms	24	75
Living patients with symptoms	8	25

TABLE 3.—*Final Electrocardiographic Changes in Living Patients*

Condition	Number	Per Cent
No evidence of coronary disease	3	10
Evidence of coronary disease	27	90
Definite RT changes	17	56.6
Cove negative T_1 or T_2	13	43.3
Diphasic T_1 or T_2	12	40
Very prominent Q_3	5	16.6
Low voltage	2	6.6
Notched QRS	3	10
QS 0.12 second	1	3.3

In table 2 is enumerated the number of living patients who have been restored to their previous occupation. Only seven, or 21.9 per cent, have not been so restored, and of this group three are able to drive their own cars at the ages of 52, 67 and 70. Of the four who are less active, one includes the neurotic patient already discussed, while three are aged 75, 74 and 74. It would seem, therefore, that there is even some basis for optimism in this inactive group. As noted, 75 per cent of all living patients are free from symptoms. Of the eight patients who have mild symptoms of stenocardia or dyspnea, four are working and four are inactive.

Table 3 covers the electrocardiographic changes in these cases at the present time. Only three cases in this group do not show evidence of coronary disease, and it is instructive that in not one of these three cases were there attacks associated with shock or marked by the more usually severe reaction on the pulse and blood pressure. The high incidence of persistent changes in the electrocardiogram for many years following cardiac infarction is an important finding and is just beginning to be recognized. As has been previously reported, the more common persistent changes are RT alteration, cove negative T_1 or T_2 or diphasic T_1 or T_2. While a prominent Q_3 was present in 16.6 per cent of this group, it was not present alone in any case. From these data I feel justified in concluding that for the remainder of these patients' lives following coronary thrombosis approximately 90 per cent may be expected to have electrocardiographic evidence of coronary disease. This should prove of distinct value in the evaluation of etiologic factors in individual cases of heart disease.

In table 4 are listed the occupations of the active group who have survived a coronary thrombosis. This list I have included merely to illustrate that such patients are able to carry responsible positions, entailing not a little physical and mental strain, with no apparent harm to themselves.

Table 5 is of interest chiefly because of the age groupings. It will be noted that the average age of this fatal group is 63.4 years, while the average age of the living group is only 54.2 years. It has often been contended by students of this subject that individuals above 60 years of age tolerate acute coronary occlusions better than those below 60 years of age. This study does not bear out such a contention and would seem much more in harmony with clinical experience in which other circulatory insult is tolerated less well by such elderly patients. As indicated by the chart, only two patients died two months after the occlusion, the greater majority succumbing within a relatively few days. Several cases in this fatal group warrant some elaboration:

CASE 1.—A man, aged 35, was stricken with a most severe attack in which auricular flutter quickly resulted. He was hospitalized and the flutter and decompensation were controlled. After two months his condition was quite satisfactory and he was allowed to work a few hours each day managing his butcher shop. Two years elapsed and the depression came, so that he began to do all his own work, lifting heavy loads and making trips up and down stairs. He soon began to have attacks of precordial pain which he would not heed, and a few weeks later was found dead in his bed.

CASE 2.—A salesman, aged 44, had a moderately severe attack, but after the third day he refused absolutely to say in bed. On the tenth day he attempted to go to the bathroom, where he collapsed and died immediately.

TABLE 4.—*Occupations of Active Group*

Merchant	8	Attorney	1
Housewife	4	Printer	1
Physician	2	Engineer	1
Broker	3	General agent for life insurance	1
Sales manager	2	Accountant	1
Bill collector	1		

TABLE 5.—*Analysis of Twenty-One Fatal Cases (39.6 per Cent Mortality)*

Average age of all patients at death 63.4 years

Age Group	Number	Fatal Cases, per Cent
60-70 years	15	71.5
50-60 years	4	19
35-50 years	2	9.5
Patients dying few hours to 2 months	19	90.5
Patients dying after 2 months	2	9.5

CASE 3.—A housewife, aged 70, had a very severe attack and for six days was unconscious. On the thirtieth day after the attack, although she was still mildly decompensated, she refused to stay in bed any longer. Orthopnea and edema developed within a few weeks and she was again persuaded to stay in bed for a time. She was never entirely free of decompensation, however, and died eight months after the infarction.

Such histories as these, I believe, are most significant, for they indicate that many patients with coronary occlusion might be saved who are now succumbing. Of recent years I have adopted the policy of very early enlisting the patient's full cooperation in remaining

absolutely at rest in bed for a minimum of six weeks following the attack. After this, another six weeks elapses before any resumption of activity is permitted, and careful supervision of the patient's activities is continued for a full year. If a sensible explanation of the exact mechanism of coronary occlusion, with the necessity for healing of damaged tissue, establishment of collateral circulation and the opening up of the thebesian channels is given in understandable terms, I believe that few patients will refuse to obey orders. I fear a great deal more any overactivity in the early weeks than the possibility of a later cardiac neurosis.

CONCLUSIONS

Fifty-three cases of acute coronary thrombosis, with a mortality of 39.6 per cent, have been studied from private practice. Of the thirty-two living patients, 78.1 per cent have been restored to their previous occupation, with one patient living thirteen years after acute infarction and ten patients living six years after the onset of infarction. The electrocardiogram is positive for coronary disease at the present time in 90 per cent of these cases. The mortality of the patients suffering occlusion at the age of 60 and above is distinctly higher than is the case at ages below 60. A much more hopeful prognosis seems justified on the basis of these studies than is generally prevalent. Of great importance is a period of many weeks' convalescence, with appropriate restrictions for a full year following acute coronary occlusion.

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MYASTHENIA GRAVIS

EFFECT OF TREATMENT WITH ANTERIOR PITUITARY EXTRACT: PRELIMINARY REPORT

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Myasthenia gravis is a rare disease characterized by excessive fatigability of muscles, especially marked in certain characteristic groups. The ocular muscles are usually first involved and there is unilateral or bilateral ptosis of the eyelids, diplopia, occasionally strabismus and a fixed eyeball, which makes it necessary for the patient to turn the body rather than the eyes in order to see objects at one side. The muscles of mastication and deglutition are frequently involved early, and the jaw sags soon after the patient starts to chew. There is strangling and difficulty in swallowing. The voice weakens rapidly, the muscles of expression tire and a masklike expression results. In more severe cases there are attacks of rapid, shallow breathing when the accessory respiratory muscles or the diaphragm are involved, and weakness of the cardiac muscle may result in palpitation and tachycardia. The involvement of the muscles of the trunk and upper and lower limbs later and in more severe cases may produce weakness and helplessness so marked in some instances that the patient is unable even to turn over in bed.

The onset of myasthenia gravis is usually gradual and the course is progressive over a period of from several to twenty or more years. Remissions are so frequent that they are regarded as a part of the disease, especially in the milder and more prolonged cases. More rarely the onset may be acute and the course rapid, resulting in death within a few weeks. Untreated, the outlook is grave, death resulting from strangulation, inanition and dehydration or secondary complications. Spessard [1] reported twenty-six deaths in thirty-eight cases while under observation.

Constant or significant pathologic changes have not been observed either clinically or at necropsy. There is wasting of the muscles from poor nutrition, but no constant or marked changes are demonstrable in the neuromuscular mechanism. Weigert demonstrated lymphocytic infiltrations in the muscles. Abnormalities in the thymus gland in patients who have died from myasthenia gravis have been noted in some instances. The constancy or significance of neither of these changes has been shown.

Since the first descriptions of the disease by Wilks, Erb, Goldflam, and others in 1877, 1878 and 1891 respectively, some 300 cases have, according to Keschner and Strauss,[2] been reported in the literature up to 1927. Boothby [3] in 1934 reported the largest individual series, which consisted of forty-seven cases observed in the Mayo Clinic over a period of twenty-six months.

Previous to 1930 no treatment of any value was known. The importance of rest and the necessity for the maintenance of nutrition were recognized. Strychnine has been given for many years and in large doses was thought to be beneficial. Arsenic, thyroid extract, parathyroid preparations, calcium, thorium and roentgen exposure over the thymus gland have all been employed with indifferent results.

In the last four years two significant discoveries have been made in the treatment of myasthenia gravis. Harriet Edgeworth [4] in 1930 reported the beneficial effects of large doses of ephedrine in her own personal case of myasthenia gravis. She used three-eighths grain (0.025 Gm.) doses of the drug twice daily. This results in prompt alleviation of symptoms in many instances, but the improvement is not always constant and, according to Boothby, excessive amounts may not only cease to allay the symptoms but even appear to aggravate the weakness and produce intense nervousness.

In 1932 Remen in Germany and Boothby [5] in this country reported beneficial effects from the ingestion of aminoacetic acid (glycine or glycocoll), which is the simplest of the series of amino acids and is present in gelatin. This suggestion was based on the work of Milhorat and others, who first noted disturbed creatine metabolism in progressive muscular dystrophy, and on the observation that of all the amino acids aminoacetic acid produces the greatest increase in creatine excretion in the urine. The results of treatment with aminoacetic acid have been encouraging. Boothby contrasts the twenty-six deaths in thirty-eight cases reported without details by Oppenheim, with the results in forty-seven cases treated with aminoacetic acid and ephedrine at the Mayo Clinic over a period of twenty-six months. In the latter series thirteen of the patients were able to work practically at full time, nine were greatly benefited, seventeen were moderately improved, one was not heard from, and seven died. Of the seven patients who died, two abandoned treatment, one died within

1. Spessard, T. N.: Myasthenia Gravis: With Report of a Case, Virginia M. Monthly **60**: 418-420 (Oct.) 1933.
2. Keschner, Moses, and Strauss, Israel: Myasthenia Gravis, Arch. Neurol. & Psychiat. **17**: 337-376 (March) 1927.
3. Boothby, W. M.: Myasthenia Gravis: Effect of Treatment with Glycine and Ephedrine (Fifth Report), Proc. Staff Meet., Mayo Clin. **9**: 593-597 (Oct. 3) 1934.
4. Edgeworth, Harriet: A Report of Progress on the Use of Ephedrine in a Case of Myasthenia Gravis, J. A. M. A. **94**: 1136 (April 12) 1930.
5. Boothby, W. M.: Myasthenia Gravis: A Preliminary Report on the Effect of Treatment with Glycine, Proc. Staff Meet., Mayo Clin. **7**: 557-560 (Sept. 28) 1932.

forty-eight hours after coming under observation, one died from pneumonia, one committed suicide, and two had failed to show any improvement under treatment.

The results of treatment with aminoacetic acid, in some instances combined with ephedrine, are definitely encouraging and are vastly superior to the results of any previous method of treatment; they fall short, however, of being entirely satisfactory. There is still a large group of cases in which recovery is incomplete and a small group in which this treatment is entirely without avail. For these cases there has hitherto been no therapeutic alternative.

Since July 2, 1934, I have used injections of anterior pituitary extract[6] in treating two cases of myasthenia gravis; the results have been surprisingly good:

CASE 1.—A woman, aged 31, had a negative past history except for diphtheria at the age of 5 years. The onset of the present illness was in 1923 while she was three months pregnant; headache, double vision, ptosis of the left eyelid and slight dizziness appeared. Later there was bilateral ptosis and general weakness. When she played the piano, the fingers and hands became powerless after a few minutes: when she ate, the jaws tired quickly and had to be assisted with the hand. The face felt stiff. The condition became progressively worse, with slight remissions. In 1927 she was confined to bed and the diagnosis of myasthenia gravis was made by Dr. G. C. Anderson of New Orleans. Another remission occurred and she was nearly normal until 1933, when the symptoms recurred. At this time there was considerable respiratory difficulty on occasions, with rapid shallow breathing and palpitation. Muscular aching was noted especially in the chest and shoulders. She was confined to bed except for a few hours each day and wore a patch over one eye to avoid the double vision. Difficulty in swallowing was noted, the voice rapidly weakened and she stuttered. She had lost weight and was unable to eat much on account of weakness of the jaw muscles.

On examination she appeared slightly undernourished and very weak. A patch was worn over one eye, the face was somewhat expressionless, the left eyelid drooped. When she walked she supported herself along the wall and on furniture, and on several occasions she had to be assisted about the room. The reflexes were normal. The blood pressure was 115 systolic, 75 diastolic. The urine appeared normal, the blood Wassermann reaction was negative and the basal metabolic rate was minus 14.

Ephedrine, even in small doses, produced such marked nervousness that she refused to take it. Aminoacetic acid was not given. July 2, 1934, daily subcutaneous injections of 1 cc. of anterior pituitary extract were started. After the second day all muscular discomfort disappeared. After the third or fourth day she was able to remain up out of bed nearly all day, and after the tenth day no symptoms whatever remained. Treatment was stopped for eight days and all symptoms returned. July 28 the injections were again started and continued at daily intervals for about ten days and then every two or three days until November 15. The symptoms promptly cleared up, as they had done at first. She stated that she felt better than at any time since 1923; she pursued all her activities normally without unusual fatigue and the weight increased from 105 to 118 pounds (47.6 to 53.5 Kg.). From Nov. 15, 1934, to Jan. 15, 1935, she received no further treatment without recurrence of symptoms. During the entire period of treatment she has eaten her usual mixed diet and has not taken any ephedrine or aminoacetic acid or been permitted to eat any gelatin preparations.

CASE 2.—A man, aged 50, while walking to the office, July 8, 1933, experienced a sudden weakness of the legs and he fell to the ground. Exertion of any kind produced markedly abnormal weakness and he was obliged to remain in bed. Double vision, ptosis of the right eyelid, weakness of the jaw, difficulty in swallowing and weakness of the voice developed. At times the muscles cramped and pained him severely. Difficult breathing occurred on some occasions. There was a weight loss from 149 to 105 pounds (67.6 to 47.6 Kg.) and he was confined to bed on a number of occasions for long periods. On one occasion for five months he was so helpless that he had to be turned in bed. There were several remissions, but for two months previous to the present examination he had been getting progressively worse and he was confined to bed almost continuously. Ephedrine had been given previously with slight transitory benefit; aminoacetic acid had not been used.

On examination he appeared poorly nourished and excessively fatigued. The face was expressionless, the eyelids drooped slightly, and the movements of the eyeball were slow and absent at times. The reflexes were normal. The urine appeared normal, the blood Wassermann reaction was negative and the hemoglobin estimation was 80 per cent.

The patient was hospitalized and placed on a 2,000 calory balanced diet. Aug. 20, 1934, daily subcutaneous injections of 1 cc. of anterior pituitary extract were started. After the second day all pain and discomfort had disappeared; after the fifth day he was able to be up out of bed for several hours at a time without marked fatigue, and by the tenth day he was able to walk at least half a mile without undue fatigue. Treatments were then continued at intervals of from two to three days; after three weeks he was able to perform hard work daily in the employ of a railroad company without undue fatigue. He stated that he had never felt better in his life. From October 13 to 25 treatment was omitted, and he worked in the cold and rain on several occasions for sixteen hours at a time; all symptoms returned and he was again confined to bed. After resumption of treatment, improvement again resulted. During cold weather it was necessary to continue the injections at daily intervals and on occasions two injections were given each day. No untoward effects have been noted from the injections at any time; no other treatment was given. Jan. 15, 1935, he was doing full time work. An attack of influenza in December 1934 confined him to bed for about one week, but he convalesced from this without unusual difficulty.

SUMMARY

This report of the effect of subcutaneous injections of anterior pituitary extract in the treatment of myasthenia gravis is a preliminary study. The number of cases available is too small and the period of time over which they have been observed is too short to permit general conclusions, but the results so far are very encouraging. Both of these patients presented undoubted clinical evidence of myasthenia gravis. In both instances the response to treatment with anterior pituitary extract was prompt and complete, and a relapse promptly followed when the injections were omitted. On the resumption of treatment the symptoms again promptly disappeared in both cases. Since no other treatment was employed, it would seem justifiable to conclude that this preparation had a marked beneficial effect on all the clinical manifestations of myasthenia gravis in these two cases.

In case 1 it was possible to discontinue the treatment after four and one-half months without recurrence of symptoms. It is impossible to determine whether this was the result of the fortuitous occurrence of a remission or whether a remission was induced by the treatment. In the second case it has been necessary to continue the treatment and during cold weather to increase the frequency of the injections in order to keep the patient clinically well. Whether a remission will be induced or not remains to be seen. In no instance have any untoward effects, either local or general, been observed as a result of the injections.

The oral administration of the extract would be preferable to its hypodermic use if it should prove as efficient. It is planned to try the relative merits of the two methods of administration.

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6. The preparation used was an acid aqueous extract of the anterior lobe of the pituitary (Antuitrin) prepared by Parke, Davis & Co.

ANORECTAL TUBERCULOSIS

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By anorectal tuberculosis is understood a chronic inflammatory process of the terminal region of the bowel, caused by the tubercle bacillus, occurring commonly as a secondary involvement in pulmonary tuberculosis. It is characterized pathologically by swelling, induration, caseation, abscess, sinus and fistula formation, and clinically by a variety of symptoms including itching, sense of irrigation, localized pain, painful defecation and the presence of a purulent discharge.

The literature on anorectal tuberculosis, or tuberculosis fistula in ano, as it is commonly called, is large and voluminous. Up to a few years ago considerable thought was given to the question whether or not all anorectal fistulas were tuberculous in character, and proponents of each view were easily found. Likewise, the questions of incidence, pathology, diagnosis and treatment have been the subject of many an acrimonious discussion. In addition to the modern literature, the ancient writings of Celsus, Hippocrates, the Old Testament, and even the Code of Hammurabi, probably the oldest known code of laws, contain references to fistula or related problems; so small wonder that the subject seems a bit bewildering at first glance.

It is our purpose in this paper to discuss our experiences with anorectal tuberculosis as we have encountered the problem in sanatorium and private practice in Denver. Our study is based on an analysis of seventy-one cases of proved or probable anorectal tuberculosis and 106 cases of nontuberculous supportive lesions of the terminal end of the bowel taken for comparative purposes.

INCIDENCE

The incidence of anorectal tuberculosis seems to be one of the disputed problems. In 1920 Thoss [1] reviewed the current German literature. He cited Richard Volkmann and Franz Koenig as believing that rectal fistulas were of tuberculous origin in the majority of cases, that de Quervain considered at least half of all rectal fistulas to be tuberculous, and that Melchior [2] found an incidence of 61 per cent at Breslau while Gös found rectal fistulas to be tuberculous in 45 per cent of cases at Munich. However, opposed to this view are the opinions of Lanz, who considers tuberculosis to be of little significance, and Frey, who found only 6.9 per cent of seventy-two surgical cases to be tuberculous by macroscopic and microscopic methods. Frey maintains that the criterion for the diagnosis is the nature of the pathologic alterations at the site of the lesion, while tuberculosis elsewhere in the body does not constitute sufficient evidence to justify the diagnosis; Melchior, however, contends that even negative microscopic examinations do not exclude the presence of tuberculosis in the fistulous tract. Thoss concludes that the reported incidence of from 50 to 60 per cent is entirely too high.

Martin [3] states that 7 per cent of the patients at the Chicago Municipal Sanitarium have anal fistula.

Lockhart-Mummery [4] states that 4 per cent of the tuberculous patients admitted to the Bromptom Hospital were suffering from fistulas. Rickmann [5] found that 2.6 per cent of the patients in a German private sanatorium had fistula in ano, and he believed that the percentage was higher in sanatoriums for the poor. Lawrason Brown [6] states that fistula is a rather frequent complication of pulmonary tuberculosis, occurring in about 3 per cent of all cases.

In 1926 Clarke [7] of Belfast reported his observations in 109 cases of fistula occurring in persons with pulmonary tuberculosis and observed that about 5 per cent of male patients have at some time ischiorectal abscess or chronic fistula, that about 5 per cent of fistula in ano can be proved tuberculous by histologic methods, while 20 per cent can be proved tuberculous by inoculation methods; further, that it is not always possible to distinguish by inspection the difference between a tuberculous and a nontuberculous fistulous tract, and that fistula in ano is thirteen times commoner in tuberculous patients than in nontuberculous patients.

In 1926 Leslie [8] reviewed the literature and concluded that there was no uniformity of opinion regarding the incidence of tuberculosis of the terminal end of the bowel; he suggested that the following criteria be used to determine the pathologic nature of fistulous tracts: (*a*) guinea-pig inoculation of material from all specimens, (*b*) a histologic study of sections from all cases, (*c*) a comparative study, following definite diagnosis, of the history of all cases treated, and (*d*) more complete examination for tuberculous foci elsewhere in the body.

In 1925 Fansler [9] stated that the diagnosis of tuberculous fistula is not justified except by definite microscopic picture or in cases in which the lesion has a typical appearance; further considering all cases of fistula in ano, it is doubtful whether more than 2 or 3 per cent are tuberculous in character.

In 1921 Gabriel [10] made a detailed bacteriologic and histologic study to determine the percentage of rectal fistulas that are tuberculous, the required proof being the definite demonstration of the tubercle bacillus. The material examined was taken from seventy-five unselected cases coming to operation at the St. Marks Hospital. In thirty of seventy-five cases, guinea-pigs were inoculated. Pus, scrapings and granulation tissue taken from the lesions were properly prepared and inoculated into guinea-pigs. Histologic study was made on the tissues removed from all seventy-five patients. Of the thirty cases studied by guinea-pig inoculation six, or 20 per cent, proved positive for tuberculosis. Of these six patients, five were males. In age they ranged from 21 to 62 years. In the twenty-four cases that were negative by the guinea-pig test, only one pre-

From the National Jewish Hospital.
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1. Thoss: Ueber die Ursache der Mastdarmfistel, München. med. Wchnschr. **67**: 1440 (Dec. 10) 1920.
2. Melchior, Eduard: Ueber die Rolle der Tuberkulose als Ursache der Mastdarmfisteln, Berl. klin. Wchnschr. **54**: 621, 1917.
3. Martin, C. L.: Tuberculous Fistula in Ano, J. A. M. A. **101**: 201 (July 15) 1933.
4. Lockhart-Mummery, Percy: Disease of Rectum and Colon and Their Surgical Treatment, London, Baillière, Tindall & Cox, 1923.
5. Rickmann, L.: Zur Entstehung und Behandlung der Mastdarmfisteln, Klin. Wchnschr. **1**: 1208 (June 10) 1922.
6. Brown, Lawrason, in Osler, William: Modern Medicine, Philadelphia, Lea & Febiger **1**: 412, 1925.
7. Clarke, B. R.: The Relationship of Ischiorectal Abscess and Fistula in Ano to Pulmonary Tuberculosis, Tubercle **7**: 277 (March) 1926.
8. Leslie, G. L.: The Importance of the Tubercle Bacillus in the Etiology of Ischiorectal Abscess and Fistula in Ano, Canad. M. A. J. **16**: 1215 (Oct.) 1926.
9. Fansler, W. A.: The Relationship of Tuberculosis to Fistula in Ano, J. A. M. A. **85**: 671 (Aug. 29) 1925.
10. Gabriel, W. B.: Results of an Experimental and Histological Investigation into Seventy-Five Cases of Rectal Fistulae, Proc. Roy. Soc. Med. (Sec. Proctology) **14**: 156-161 (June) 1921.

sented evidence of pulmonary tuberculosis, while in two cases giant cells were found on microscopic section. In the forty-five cases examined by histologic methods only, tubercle bacilli were found in the stained sections of four cases (9 per cent), and these also revealed characteristic giant cells. Of these four cases, two showed evidence of pulmonary tuberculosis and two presented no evidence of pulmonary tuberculosis. Nine others showed giant cells but no tubercle bacilli, while the remaining thirty-two presented no suggestion of tuberculosis.

In 1933 a more detailed study was made in which the pus, scrapings and tissue removed from fistula in ano at operation were examined, every precaution being used to avoid extraneous contamination.[11] Only standardized histologic and bacteriologic methods were employed, and precautions were taken to obtain accurate clinical records regarding the tuberculous status of the patient. The guinea-pigs used were specially raised and safeguarded against spontaneous tuberculosis infection. The culture methods employed were those described by Corper and Uyei.[12]

A total of 155 cases were studied: 106 were clinically and roentgenologically negative for tuberculosis; eighteen presented evidence of arrested pulmonary tuberculosis; in thirty-one presenting active tuberculosis, tubercle bacilli were isolated in the specimens from twenty-four patients by the guinea-pig and culture methods, while one case showed tubercle formation or giant cells, another specimen showed granulation tissue reaction, while in none were tubercle bacilli found by any of the simple staining methods. Of the eighteen cases of inactive tuberculosis there were ten specimens in which tubercle bacilli were found by the guinea-pig or culture methods, and only three of these showed tubercle formation or giant cells. Of the 106 cases in which the patients were clinically free from tuberculosis, tubercle bacilli were not found by any of the methods.

These experiments lead to the observation that it is futile to place too much reliance on histologic methods alone, that the guinea-pig and culture method such as described by Corper are far more reliable tests, and that ischiorectal abscess and rectal fistula in persons clinically free from tuberculosis are seldom tuberculous, since tubercle bacilli were not isolated in any of the 106 patients who were clinically free from tuberculosis. On the other hand, when the patient has clinical tuberculosis either active or quiescent, the process is very likely to be tuberculous, since 77 per cent of these patients with active tuberculosis and 55 per cent of those with inactive tuberculosis were positive for tubercle bacilli.

The conclusion reached from a study of the literature and of the foregoing experiments regarding the incidence of anorectal tuberculosis is that from 3 to 5 per cent of all persons with pulmonary tuberculosis develop anorectal complications at one time or another and that these are generally tuberculous in character, whereas, similar lesions in persons who are clinically free from tuberculosis are likely to be nontuberculous in character.

11. Chisholm, A. J.: The Relation of Pulmonary Tuberculosis to Anorectal Fistulae, Surg., Gynec. & Obst. **66**: 610 (March) 1933; Surgical Management of Fistula-in-Ano in the Tuberculous, Tr. Am. Proc. Soc., 1927.

12. Corper, H. J., and Uyei, Nao: Further Observations with a New Method for Cultivating Tubercle Bacilli: A Comparison with Guinea-Pig Inoculation and Petroff's Method, J. Lab. & Clin. Med. **14**: 393 (Feb.) 1929; ibid. **15**: 348 (Jan.) 1930; Arch. Path. & Lab. Med. **7**: 835 (May) 1929.

AGE AND SEX

Powell and Hartley [13] say that rectal fistula is almost entirely confined to males. Melchior found 92 per cent in males in a study of 192 cases of fistula. Von Kozuchowski found that 87 per cent of his 203 patients were males. Clarke found that ischiorectal abscess and fistula occur in males about eight times more commonly than in females. Our series of seventy-one patients with anorectal tuberculosis shows fifty-three males and eighteen females, a ratio of 3 to 1.

All ages are involved. Gabriel reports an age incidence of from 21 to 62 years. Our series shows the ages to range from 16 to 52 years. Since anorectal tuberculosis is a complication of pulmonary tuberculosis, the age incidence will follow the general age incidence of tuberculosis, as shown in the accompanying table.

PATHOLOGY

Anorectal tuberculosis generally occurs as a complication to pulmonary tuberculosis. It rarely occurs as a primary lesion. Fansler emphatically states that tuberculosis is but rarely primary in fistula in ano and that, if it occurs at all, the incidence is not more than a small fraction of 1 per cent. This view is entirely consistent with our own observations. In the examination of specimens removed at operation from 106 patients with ischiorectal abscess or fistula who were clinically free from pulmonary tuberculosis, tubercle bacilli were not demonstrated in a single specimen by the guinea-pig test or culture method, and histologic section showed giant cells in only two instances. It has been repeatedly argued that giant cells are suggestive but not pathognomonic of tuberculosis. On the other hand, in 77 per cent of thirty-one active cases of pulmonary tuberculosis and in 55 per cent of eighteen arrested cases the tubercle bacilli were recovered from the rectal lesions. It is quite likely that the actual incidence of anorectal tuberculosis was even higher than these figures indicate, since even the guinea-pig requires a minimum dose of from ten to 100 bacilli of a virulent strain to produce infection. Fansler [14] states that in tuberculous patients more than 90 per cent of perirectal abscesses and fistulas can be proved tuberculous by laboratory methods.

Age Incidence of Anorectal Tuberculosis: Analysis of Seventy-One Cases

Age	Number of Cases
16-20 years	4
21-30 years	30
31-40 years	24
41-50 years	12
51-60 years	1

Anorectal tuberculosis probably begins as an infection of a crypt at the junction of the skin and mucosa. When an infection has set in, certain forces operate to favor the spread of the inflammatory process. The first of these forces is the normal physiologic activity of the rectum and anus, wherein the periodic contractions and dilatations due to the passage of gases and fecal material prevent the infected parts from resting or adhering to one another. The second factor is the constant contact of the lesion with bacteria and fecal matter, which tends to maintain the septic process and favors reinoculation and secondary infection.

13. Powell, R., and Hartley, P. H. S.: Diseases of the Lungs and Pleurae, Philadelphia, P. Blakiston's Son & Co., 1921.

14. Fansler, W. A.: Rectal Care of the Tuberculous, Am. Med. **37**: 8, 1931.

Once a tuberculous infection has set in at the anorectal region, there is a strong probability of the process spreading and giving rise to infiltration, caseation, abscess, sinus and fistula formation.

Regarding the gross appearance of the lesion, we do not believe that the gross pathology is diagnostic of tuberculosis. Of course it would be absurd to say that any tuberculous process does not produce characteristic changes, but a study of the literature certainly indicates that there is no agreement as to what these gross evidences are. If there is any group or school that has a strong heritage of anatomic pathology, it is the disciples of Virchow. There are numerous German writers, such as Volkmann, Koenig, Melchior and Gös, who regard the majority of all rectal fistulas as being tuberculous in character; yet they are not supported by experimental studies which have shown that the majority of all rectal fistulas are definitely not tuberculous, whereas it is only in those patients who have pulmonary tuberculosis that the rectal lesion is apt to be tuberculous. So the description of the gross appearance of the lesion must be left for further study.

In the past, most of the emphasis of anorectal tuberculosis has been paid to the fistula stage of the disease. One even finds efforts to drag the term "fistula" into the clinical picture. References to "closed fistula" are abundant in the literature, whereas the term is a contradiction, since there is no such thing as a closed fistula; the lesion rather is a "sinus." Between fistula and ischiorectal abscess there seems to be a literary gap, when actually all fistulas are terminal stages of abscesses. From a therapeutic point of view there is little difference between sinus, abscess and fistula. The indications and procedure of treatment is about the same in all.

Nevertheless, anorectal tuberculosis begins with a tubercle, a productive inflammatory reaction consisting of monocytes, lymphocytes, epithelioid cells and giant cells. The lesion begins in a crypt, which also harbors other pathogenic organisms; hence secondary infection takes place early. Induration, caseation and necrosis follow, giving rise to the anorectal abscess. Once formed, the abscess continues to enlarge and the pus burrows in the direction of least resistance. It may invade the ischiorectal fossa, producing an ischiorectal abscess, or it may burrow through the skin or mucosa forming a sinus, which becomes internal or external depending on its location; or it may form an artificial communication between the mucosa and any other neighboring surface, producing a fistula, which in turn may assume any of several forms and becomes designated as simple, multiple, complex, horseshoe or by any other descriptive term used to indicate its shape, position, complexity or multiplicity; or it may communicate with any of the neighboring organs, such as the bladder or the vagina.

SYMPTOMS

The symptoms of anorectal tuberculosis are extremely variable and depend on the extent and character of the pathologic process. The symptoms may consist of nothing more than a rectal consciousness, or there may be present intense pain markedly aggravated by defecation. Obviously, in the early stages of the disease the symptoms will be mild or even absent. Then as induration develops there will be a sense of fulness, discomfort on defecation, or itching, and on examination a lump may be palpated. As the induration stage passes on to caseation and abscess formation, the symptoms become markedly aggravated. The rectal consciousness develops into a sensation of discomfort, which progresses into pain commonly of a throbbing character, which tends to localize in one segment of the anorectal region. Constitutional symptoms may appear as chills, fever, leukocytosis, headache, backache, languor, and loss of appetite. Defecation becomes painful, sometimes micturition also becomes painful accompanied by a tendency toward inhibition, and the patient may become toxic. On examination a soft, tender, red mass is evident. Sometimes the symptoms of the abscess stage are much milder. In untreated cases the abscess will probably rupture into some outlet surface, producing either a sinus or a fistula, depending on the number of openings. At this stage the acute symptoms tend to subside and are followed by more chronic and less violent manifestations. From the opening of the sinus or fistula, a seropurulent exudate is discharged. The symptoms are rectal discomfort, burning, itching, and sometimes pain on defecation. Examination shows an adventitious opening into the rectum, anus or skin into which a probe may be passed. Sometimes the opening is difficult to locate; sometimes it is raised, or indurated, reddened and surrounded by an irritated or even by an eroded area, while sometimes there is present fibrous tissue about the opening, indicating an attempt at repair. Manifestations of skin tuberculosis may be present as miliary cutaneous tuberculosis, lupus vulgaris, or scrofuloderma. When the opening is located, the contour of the fistulous tract may be evaluated by injecting methylene blue or, still better, an opaque substance that casts a shadow on an x-ray plate, which may then be studied leisurely for proper evaluation.

Secondary colon symptoms are quite common. Elsewhere we pointed out that rectal diseases, such as cryptitis, proctitis, hemorrhoids, fissures, fistulas and abscesses, commonly result in increased irritability, and this gives rise to spastic or irritable colon, which becomes manifested by spastic constipation in which the stools are unsatisfactory to the patient, infrequent, difficult to evacuate, and of small caliber. Many patients acquire the cathartic habit as a result of prolonged colon irritability. Abdominal consciousness is common; also abdominal distress and pain are likely to occur in those cases in which there is already a centering of interest in the abdomen. Gastric symptoms sometimes occur as epigastric distress, hyperacidity and pylorospasm, and the differential diagnosis between peptic ulcer and rectal disorder with secondary gastric symptoms is by no means always a simple procedure. Flatulence and gas distress are of common occurrence. Sometimes certain constitutional symptoms develop, such as chronic fatigue, chronic indigestion, underweight, nausea, vomiting, introspection, insomnia and mental depression.

DIAGNOSIS

In the diagnosis of anorectal tuberculosis, we are governed by the guinea-pig and culture studies in which anorectal material such as pus, scrapings or tissue removed from 106 patients who were clinically free from pulmonary disease failed to yield the tubercle bacillus, whereas similar material from thirty-one active cases and eighteen cases of arrested pulmonary tuberculosis yielded the tubercle bacillus in 77 and 55 per cent of the cases, respectively, and it is our impression that the actual incidence in these cases was even higher. In the case of intestinal tuberculosis, we have already expressed the opinion that in adults we would hesitate

to diagnose anorectal tuberculosis in the absence of pulmonary disease. In advanced anorectal tuberculosis, in which there is appreciable excoriation, fibrosis or skin involvement, the signs are very suggestive; but in the early case we hesitate to diagnose anorectal tuberculosis in the absence of pulmonary disease.

As to the type of anorectal lesion, whether it is a fissure, an infected crypt, a hemorrhoid, an abscess or a fistula, the diagnosis is readily made from the signs and symptoms. The differential diagnosis between these lesions has been amply covered in numerous standard textbooks on proctology and need not be repeated here.

It does not follow that all rectal lesions in patients with pulmonary tuberculosis are also tuberculous in character. In the case of intestinal tuberculosis, we [15] reported elsewhere a study of 125 patients who were residents in a tuberculosis sanatorium and who presented gastro-intestinal problems. In this series, intestinal tuberculosis was diagnosed in only twenty-nine cases, or 23 per cent of the series. The remainder, or 77 per cent of the cases, presented nontuberculous ailments. Likewise, there are undoubtedly numerous anorectal lesions in the tuberculous that are nontuberculous, but they are of the type that are less likely to become involved in a tuberculous process by reason of not presenting an easy portal of entry, such as hemorrhoids, polyps and other lesions of a noninflammatory character, or open lesions in the early stage of development. The reason that fissures, sinuses, fistulas and other open lesions tend to become tuberculous, even if they are not tuberculous in the beginning, is the constant passage of tubercle bacilli at their openings, which, of course, favors tuberculous infection if it has not already set in. Thus Nüssel [16] in 1923 showed that, in 120 patients who had pulmonary tuberculosis, tubercle bacilli were found in the feces of 110 patients, which he explained as being swallowed organisms. Certainly since tubercle bacilli occur in the intestinal contents of so high a percentage of patients it becomes evident that any open lesion readily favors inoculation with the tubercle bacillus, in addition to those already infected.

The diagnosis of anorectal tuberculosis is another phase of the subject that is a matter of controversy. Sweany [17] states that the diagnosis of tuberculosis in fistula of the anus and rectum depends entirely on the histopathologic changes, because the gross, clinical and bacteriologic changes are indefinite or of no value. The histopathologic diagnosis, he states, depends on the time honored presence of tuberculous granulation tissue with Langhans' type of giant cell characteristic tubercle formation and necrotic center, fibroblastic capsule, and monocytic and lymphocytic infiltration; however, he admits that granulation tissue of any chronic nature may simulate tuberculosis, even to the presence of giant cell formation. Nevertheless he maintains that with careful study more than 75 per cent of fistulas in the tuberculous should be found to be tuberculous, and he believes that all of them but an insignificant minority are tuberculous in character.

Our own experience, interestingly enough, arrives at the same conclusion as that of Sweany, but by different diagnostic methods. In our hands histologic methods have proved disappointing, whereas the culture methods of Corper and the guinea-pig test have given high results comparable to that found by Sweany.

The diagnostic conclusion that we have arrived at is that in nontuberculous persons open anorectal lesions such as sinus and fistula are rarely tuberculous in character, whereas in patients with pulmonary tuberculosis such lesions are nearly always tuberculous.

INDICATIONS FOR TREATMENT

Tuberculous sinus and fistula are notoriously chronic in character. This holds true of all forms, whether they are located in the cervical region, bones, chest, anorectal region or elsewhere. Metcalf [18] has pointed out that, of all forms of tuberculosis, ulcerating and fistulous tracts are the most difficult and least favorable for treatment; further, secondary infection is usually present; and if a cicatrix starts to form before the source of the discharge has cleared up, it soon breaks down again, reestablishing the fistula. In all forms of tuberculous fistula or sinus, there are present at least two factors that promote chronicity; namely, the tuberculous infection, and, second, the superimposed secondary infection. In lesions of the anorectal region there are present in addition to these the periodic contractions and dilatations, which interfere with the opportunities of the infected parts for rest and recuperation. In tuberculous fistula of the anorectal region it is true that healing sometimes begins, as manifested by the presence of scar tissue; but it is seldom completed. The statement that tuberculous fistulas are notoriously chronic is especially true in the anorectal region.

The following indications are present for treatment: The symptoms of rectal discomfort, pain, swelling or discharge demand attention as much in the rectal region as they do elsewhere. Further, a person who is burdened with a general disease should have the burden mitigated to any extent that it is possible to do so. In the general management of tuberculosis, the program calls for long periods of rest. This has its advantages; but it also has its disadvantages, one of which is giving the patient excessive opportunity for introspection, self analysis and self pity. The presence of a rectal lesion gives the patient one more opportunity in this direction. Another indication for treatment is the casual relationship existing between rectal pathologic changes and spastic or irritable bowel. A pathologic condition of the rectum is a direct etiologic factor of irritable colon, and irritable bowel can make a hypochondriac of any person who has time for self analysis combined with a tendency in that direction, and many sanatorium patients are candidates for this additional burden.

Another indication for the treatment is the menace of focal infection. The infected rectum can become a primary focus of infection for lesions elsewhere in the body. The rôle of infected teeth, tonsils and sinuses as sources of focal infection is well recognized; infections about the rectum as a primary focus of infection is slowly being established. It is no longer an unusual experience to have some systemic infection such as arthritis persist after the teeth, tonsils, sinuses, gallbladder and other viscera have been removed and then yield to treatment on the clearing up of a rectal infection. It has been our experience that many tuberculous patients who had an arthritis as well as fistula improved markedly after fistulectomy, as far as the arthritis was concerned, in addition to some improvement in the pulmonary lesion.

15. Gauss, Harry; Singerman, Isidor, and Black, L. T.: The Differential Diagnosis of Intestinal Tuberculosis, Am. Rev. Tuberc. **28:** 684 (Nov.) 1933; The Spastic Colon, Ann. Int. Med. **3:** 1128 (May) 1930.
16. Nüssel, K.: Ueber Tuberkelbacillenbefund in Stuhl, München. med. Wchnschr. **70:** 357 (March 23) 1923.
17. Sweany, cited by Martin.[8]
18. Metcalf, W. B.: Tuberculosis of the Lymphatic System, New York, Macmillan Company, 1919.

TREATMENT

Treatment can be divided into three classes: (*a*) therapeutic nihilism, (*b*) medical management and (*c*) surgical therapy.

Therapeutic nihilism, a relic of a past age, is still extant today. There still remain therapeutic nihilists in existence. One encounters them here and there. The therapeutic nihilist has faith in nothing, sees no virtue in any procedure, does nothing, lets nature take its course, and follows the path of least resistance.

Medical management consists of the general care of the tuberculous and, secondly, local treatment of the lesion. Local treatment consists of various types of applications, injections, instillations and irrigations. Local therapy can be disposed of by simply stating that it is not effective. The general care for the tuberculous has its place in the therapy.

The third class is surgical therapy. Up to a few years ago surgical treatment was strongly condemned. It was generally considered merely a procedure for substituting one fistula for another. In 1926 Clarke wrote: "Pulmonary tuberculosis should be rigorously excluded in every case of fistula before surgical treatment is considered." In 1927 we undertook to ascertain the existing attitude of internists in Colorado toward surgical treatment of anorectal tuberculosis. Questionnaires were sent to twenty-eight physicians who had had experience in the treatment of tuberculosis in sanatorium or private practice. Out of the twenty-eight replies only two favored the operation, four approved of it in selected cases and twenty-two opposed it.

In the light of existing experience with the knife operation performed under general anesthesia, this adverse reaction was justified. Too often the operation accomplished only an extension of the tuberculous process rather than a cure. The failure of operated lesions to heal after the knife operation probably resulted from an extension of the tuberculous infection along new channels that were opened up by the incision. The operation simply opened up new channels for the tubercle bacillus to infect, and, like similar lesions in the neck, chest, bones or elsewhere, the clinical results were unsatisfactory. Furthermore, the general anesthetic was regarded as having a deleterious effect on the pulmonary lesions.

However, important progress was made when the cautery was introduced and sacral anesthesia was substituted for the general inhalation anesthesia. Wood [19] showed experimentally that in treating localized tuberculosis with the cautery there is a rewarding influence on the tuberculous infection, both in the immediate area and in the area adjacent to the operated tissue. The tissue treated with direct heat seems to be stimulated to fibrous tissue formation, which is a desirable result; also the use of the cautery seems to induce a type of inflammation that results in the formation of new blood vessels, which aids in the nutrition of the local tissues. Cauterization seals the lymphatics and blood vessels, thereby preventing a spread of the disease either locally through the lymphatics or generally through the blood vessels.

In the surgical treatment of anorectal tuberculosis, the matter of anesthesia occupies an important place in the therapy. The inhalation method of general anesthesia was found objectionable because of its deleterious effects on the pulmonary lesion. Too often an aggravation of the pulmonary tuberculosis was noted after a general anesthesia. In the caudal anesthesia administered sacrally, the objections to the general anesthesia are eliminated; yet complete anesthesia is obtained in the rectum, anus, perineum and buttocks, with complete relaxation of the sphincter muscles.

19. Wood, G. B.: The Use of the Electric Cautery in Laryngeal Tuberculosis, Am. J. M. Sc. **163:** 854 (June) 1922.

RESULTS OF SURGICAL TREATMENT

Within the past few years, one of us (A. J. C.) employing the cautery and sacral anesthesia has operated on seventy-one tuberculous patients presenting various types of anorectal lesions such as abscess, sinus and fistula. Of these seventy-one patients fifty-one had active tuberculosis, while twenty had arrested tuberculosis. In one case only the clinical results after operation were unsatisfactory. In seventy cases, or 98 per cent, the clinical results were very gratifying. Beyond a temporary discomfort and a slight increase in the pulse and temperature in some cases, the patients showed a marked improvement. Healing generally took place in from six weeks to three months. There was no spread of the tuberculous process at the rectum. There have been no recurrences in any of the patients, some of whom have been under observation for more than five years. Most of the patients made a slight gain in weight following the operation, and they showed a general improvement. In a few of the patients who had had some evidence of focal infection such as arthritis and rheumatism, the improvement in these syndromes was most gratifying due to the removal of the foci of infection.

SUMMARY

1. This study is based on seventy-one cases of proved or probable instances of anorectal tuberculosis and 106 cases of nontuberculous suppurative lesions of the terminal end of the bowel, taken for comparative purposes.

2. In from 3 to 5 per cent of patients with pulmonary tuberculosis anorectal complications develop and these are generally tuberculous in character.

3. The age incidence of the patients with anorectal tuberculosis follows the general age incidence of tuberculosis.

4. Anorectal tuberculosis generally occurs as a complication of pulmonary tuberculosis. Primary anorectal tuberculosis is extremely rare.

5. The symptoms are variable and depend on the extent and character of the lesion. There may be present itching, irritation, localized pain, painful defecation, purulent discharge, induration, abscess, sinus, fistula or cutaneous tuberculosis.

6. In the diagnosis of anorectal tuberculosis, we have found that the injection of emulsions prepared from pus, scrapings or tissue injected into guinea-pigs or inoculated into suitable culture mediums is the most reliable test.

7. Experimentally we have found that such material from thirty-one active cases and eighteen arrested cases of pulmonary tuberculosis yielded the tubercle bacillus in 77 and 55 per cent of the cases, respectively. It is our opinion however, that the vast majority, over 90 per cent, of open suppurative lesions of the rectum in patients with pulmonary tuberculosis are or become tuberculous in character; this figure agrees with the opinions of Fansler and Sweany.

8. Treatment can be divided into (*a*) therapeutic nihilism, (*b*) medical management and (*c*) surgical care.

9. Therapeutic nihilism and medical management of the anorectal lesions in the tuberculous are impotent in removing either the lesions or the symptoms arising from them.

10. Surgical treatment employing the cautery and sacral anesthesia eliminates the older objections that were raised against the deleterious effects of the general anesthetic on the pulmonary lesion, and the dissemination of the local tuberculosis by the openings of new channels for further infection by the tubercle bacillus.

11. One of us (A. J. C.) has operated on seventy-one patients with proved and probable anorectal tuberculosis, including sinus, abscess and fistula. In seventy patients the clinical results were most gratifying. There occurred a complete healing of the local wound in from six to twelve weeks; there resulted in most patients a slight gain in weight, some improvement systemically, complete relief from the anorectal symptoms and, in the case of those with manifestations of focal infection, a marked improvement from these syndromes.

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GOUT

CHANGES IN SYMPTOMS AND PURINE METABOLISM PRODUCED BY HIGH FAT DIETS IN FOUR GOUTY PATIENTS

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It has been known for many years that there is some relationship between gout and uric acid, and many investigations of the uric acid metabolism of gouty patients have been carried out.[1] Because the number of cases of gout reported throughout the country is increasing, such studies are of especial interest at the present time. Some of the recent studies have shown that the methods of diagnosing the disease are apparently not wholly satisfactory, for in 100 cases an average period of fifteen years elapsed between the first appearance of symptoms and the establishment of the correct diagnosis.[2] The differentiation of gout from chronic arthritis, when joints other than the big toes are involved, seems to be particularly difficult. We feel that the experiments reported here may serve as a basis of a useful test in helping to establish a correct diagnosis.

A number of workers have found that there is an increase in the blood uric acid and a decrease in the amount of that compound in the urine when normal subjects fast or ingest diets high in fat. In 1924, as the result of long and careful study, Lennox described such observations during twenty-two fasting periods, each at least eight days long, in two normal subjects and twenty-two patients with epilepsy.[3] When diets high in fat were fed at the end of these fasts, no changes in the blood uric acid were observed; but when diets high in protein or carbohydrate were used there was a prompt return to the prestarvation level in the blood within twenty-four or forty-eight hours. As the blood uric acid fell, there was an increase in the amount of uric acid in the urine. Hoeffel and Moriarty[4] in 1924 noted an increase in the blood uric acid of two fasting children. Harding and his co-workers[5] in 1925 produced a marked increase in the blood uric acid concentration by giving high fat diets to women in the various stages of pregnancy. In these experiments a prompt return to normal values occurred as soon as high carbohydrate or high protein diets were fed.

It seemed logical to determine the effect of similar diets in gout, and therefore diets high in fat were fed to four gouty patients who came under our observation. The studies were carried out in the first medical service of the Buffalo General Hospital. To Dr. Nelson G. Russell, the attending physician, we are indebted for advice and encouragement extended during the experiments. The diagnoses were made according to the criteria of Hench.[2] The details of the diets were arranged by the dietitians of the hospital, based on McLester's[6] tables. The purine content of each diet was approximately equivalent to 0.042 Gm. of uric acid daily, and the other constituents were varied to suit the needs of the individual patients and the experimental conditions that we wished to produce. The urinary uric acid was determined by the method of Benedict and Franke[7] and the blood uric acid by Folin's direct uric acid method.[8]

Much to our surprise, striking changes in symptoms occurred when these diets were ingested. These clinical changes, which formed the most interesting part of the study, are described in the protocols of the separate experiments.

CASE 1.[9]—*History.*—E. H., a man, aged 52, admitted to the hospital in July 1930, complained of persistent headaches. During his stay he had an attack of gout in the left knee, characterized by increased warmth, pain and swelling, which lasted for about one week. Further questioning at this time revealed the fact that he had had periodic attacks of gout during the preceding eighteen years and that each of these incapacitated him for a period of from one to two weeks. During the intervals between the attacks he was completely free from joint symptoms. The joints most frequently involved were those of the knee and big toe. On two occasions tophi containing sodium urate crystals had been removed from the lobe of the right ear. In July 1932 many of the joints of the body were involved. There was marked swelling of the joints of the hands and feet. Both knees were swollen, warm and painful. It was necessary to give large doses of salicylates and opiates to control the pain. Small doses of colchicum did not help; large doses had not been tried.

Physical Examination.—The patient was well nourished and well developed. The afternoon temperature was 101 F. and the pulse 110 per minute. He appeared to be suffering intense pain. The pharynx was reddened and a few cervical lymph nodes were enlarged. No râles were heard in the lungs, and

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1. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry: Interpretation, Baltimore, Williams and Wilkins Company, chapter viii, **1:** 408-454, 1932.
2. Hench, P. S.; Vanzant, F. R., and Nomland, Ruben: Basis for the Early Differential Diagnosis of Gout: A Clinical Comparison of 100 Cases Each of Rheumatic Fever, Infectious Arthritis and Gout, Collected Papers of the Mayo Clinic of Mayo Foundation **20:** 790, 1928.
3. Lennox, W. G.: Increase of Uric Acid in the Blood During Prolonged Starvation, J. A. M. A. **82:** 602 (Feb. 23) 1924; A Study of the Retention of Uric Acid During Fasting, J. Biol. Chem. **66:** 521 (Dec.) 1925.
4. Hoeffel, Gerald, and Moriarty, Margaret: The Effect of Fasting on the Metabolism of Epileptic Children, Am. J. Dis. Child. **28:** 16 (July) 1924.
5. Harding, V. J.; Allin, K. D.; Eagles, B. A., and Van Wyck, H. B.: The Effect of High Fat Diets on the Content of Uric Acid in the Blood, J. Biol. Chem. **63:** 37 (Feb.) 1925.
6. McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 3, Philadelphia, W. B. Saunders Company, 1929.
7. Benedict, S. R., and Franke, E.: A Method for the Direct Determination of Uric Acid in Urine, J. Biol. Chem. **52:** 387 (June) 1922.
8. Folin, Otto: A System of Blood Analysis: Supplement IV. A Revision of the Method for Determining Uric Acid, J. Biol. Chem. **54:** 153 (Oct.) 1922.
9. A preliminary report of the results obtained on this patient was given in the Proceedings of the Buffalo Academy of Medicine (Lockie, L. M., and Hubbard, R. S.: Presentation of a Case of Gout, Bull. M. Soc. County of Erie and Buffalo Acad. Med. **11:** 10 [Feb.] 1934).

the breath sounds were not changed. The left border of the heart was 11 cm. from the midsternal line in the sixth interspace. The aortic second sound was accentuated. No murmurs were heard. The blood pressure was 175 mm. of mercury systolic and 100 mm. diastolic. The liver was not tender but the edge was palpable. No masses were felt in the abdomen. The hands, wrists, knees and ankles were swollen, warm, tender on pressure, and very painful on motion.

The urine was cloudy, with a specific gravity ranging from 1.010 to 1.020. The albumin content was 2 plus. The sediment contained from 30 to 40 white blood cells per high power field. The phenolsulphonphthalein excretion was 40 per cent in two hours. There was 80 per cent of hemoglobin present (Tallqvist). The red cell count was 4,800,000 and the white count 9,300, with 63 per cent polymorphonuclear leukocyte cells. The blood Wassermann reaction was negative. The blood uric acid was 6, the urea nitrogen 14, and the dextrose 130 mg. per hundred cubic centimeters.

On roentgen examination the distal ends of the first phalangeal joints of the great toes had a punched out appearance that suggested gout.

Course.—At a time when the patient had been practically free from symptoms for two weeks he was put on a high fat diet consisting of 50 Gm. of carbohydrate, 50 Gm. of protein and 220 Gm. of fat. When he had been on this diet seven days, pain, swelling and tenderness in the joints of the feet and ankles developed. During this period the blood uric acid increased. The initial value was 5.5 mg. per hundred cubic centimeters, and after eleven days on the diet it reached 8 mg. per hundred cubic centimeters. There was also during this period a diminution of the amount of uric acid in the urine.[10] No medication of any kind was given, but the diet was changed to one consisting of 380 Gm. of carbohydrate, 60 Gm. of protein and 130 Gm. of fat. Within two days a marked improvement in the symptoms took place. The carbohydrate was then reduced to 200 Gm. because the patient could not eat the larger amount. Pain did not return, but the blood uric acid remained high for fourteen days. After that period of time, 250 Gm. of liver was fed. This did not cause an exacerbation of symptoms or a significant further increase in the blood uric acid. The blood uric acid remained high (between 7.2 and 7.8 mg. per hundred cubic centimeters) for the next eleven days. Five days later, just before the patient left the hospital, it fell to 5.7 mg., the value found before the dietary experiments were begun. Throughout this twenty-five day period the basal diet was 200 Gm. of carbohydrate, 60 Gm. of protein and 130 Gm. of fat.

The patient has been seen every two or three weeks in the outpatient department up to the present time (October 1934). He has had a few twinges of pain in the small joints of the hands and feet, which have lasted for two or three hours at a time. His general health has been good.

CASE 2.—*History.*—W. R., a man, seen for the first time in February 1934, had been well until January 1930, at which time he had an excruciating pain in the left ankle. This disappeared in a few days, but shortly afterward the right knee became swollen and very painful. A diagnosis of rheumatism was made in another hospital, and the tonsils were removed one month later.

Each year after that time he had several attacks, presumably of gout, which involved the weight-bearing joints. One of these in 1932 also involved the small joints of the hands. He found that strenuous exercise, an alcoholic debauch or thorough chilling provoked attacks. Each episode followed the same course. There was marked swelling, pain, tenderness and limitation of motion. Within from ten to fourteen days there was complete recovery from joint symptoms.

Albuminuria was found in 1926. A molar tooth was extracted and an antrum washed in 1933 without producing a flare up of symptoms.

Physical Examination.—The patient was fairly well nourished. The temperature was 99.6 F. No tophus was found. The heart was slightly enlarged. No heart murmurs were heard. The blood pressure was 130 systolic and 80 diastolic. Several joints were involved. Those showing the most pronounced symptoms were the left knee and ankle. There was marked swelling, tenderness, and limitation of motion. No urethral discharge was present.

Analyses of the urine showed that the specific gravity varied between 1.013 and 1.020 and that it contained 3 plus albumin and a few hyaline casts. The hemoglobin was 68 per cent (Sahli). The red blood cells numbered 4,400,000 and the white cells, 14,000, with 75 per cent polymorphonuclear cells. The blood sedimentation rate was greatly increased. The uric acid concentration was 6.2, the urea nitrogen 35, the nonprotein nitrogen 71 and the creatinine 2 mg. per hundred cubic centimeters of blood.

Course.—He recovered from the joint symptoms in a few days and stated that, judging from past experience, he would not have another attack for some months. After one week he consented to ingest a diet containing 60 Gm. of carbohydrate, 60 Gm. of protein and 230 Gm. of fat. Within three days he felt poorly. The left hand and knee were swollen and painful. The joints in the left hand were especially sore. He felt so ill that he stayed in bed, although previously he had been ambulatory for five days. No medication of any kind was given, and the diet was changed to one consisting of 400 Gm. of carbohydrate, 70 Gm. of protein and 60 Gm. of fat. There was marked improvement in the symptoms within forty-eight hours. No significant variations in the blood uric acid were found at any time during the experiment. In three determinations on different days the values lay between 5.5 and 5.8 mg. per hundred cubic centimeters of blood. The explanation of this constancy of the blood uric acid seems obvious. The diet high in fat was taken for only three days, and demonstrable changes probably should not have been expected.

During the five months that have elapsed since the experiment there has been no recurrence of joint symptoms.

CASE 3.—*History.*—A. A., a white man, aged 74, Jewish, admitted to the first medical service in October 1933, during the preceding twenty-three years had had at least twelve attacks of gout. Each time there was pain, redness, and swelling of the joints of the lower extremities, particularly of the big toe joints, the right knee and the right ankle. Between attacks he felt entirely well. Two weeks before he entered the hospital pain developed in the right foot. This was followed a day later by swelling of the subcutaneous tissue. During this period he felt poorly.

For ten years dyspnea on exercise and occasional edema of the ankles had been present. He had had nocturia for three or four years and had lost 30 pounds (13.6 Kg.) during the two years preceding admission.

Physical Examination.—He seemed well nourished. No tophus was seen. The area of precordial dulness was slightly enlarged. No murmurs were heard on auscultation of the heart. The blood pressure was 128 systolic and 90 diastolic. The liver edge was palpable. The right foot was warm and painful to touch and could be moved very little without causing great pain. No other joints were involved.

The specific gravity of the urine varied from 1.015 to 1.018 in various specimens, and 3 plus albumin was present. The hemoglobin was 78 per cent (Sahli) and the red cells numbered 4,200,000. There were 12,000 white cells; 75 per cent of these were polymorphonuclear cells. The blood Wassermann reaction was negative. The basal metabolic rate was minus 3 per cent. The concentration of uric acid was 6.8, of urea nitrogen 34 and of dextrose 130 mg. per hundred cubic centimeters of blood.

On roentgen examination the feet showed a decreased density in the distal ends of the first metatarsal bones and two small areas that had a punched out appearance.

10. Marked temporary fluctuations in the rate of excretion of uric acid are common in gouty patients (His, W.: Die Ausscheidung von Harnsäure im Urin der Gichtkranken mit besonderer Berücksichtigung der Anfallszeiten und bestimmter Behandlungsmethoden, Deutsches Arch. f. klin. Med. **65**: 156, 1900) and were found during our experiments. These made interpretation of the urine changes difficult, for it was necessary to follow the general trend of changes in values and to ignore occasional large variations in them. The interpretation was further complicated by failure to collect accurate twenty-four hour specimens in all instances. To minimize the effect of such failures the creatinine content of each urine was determined, the ratio between creatinine and uric acid calculated and variations in the values of this ratio studied.

Course.—The patient had entered the hospital at approximately the end of an attack of gout. After he had been without signs or symptoms for one week he predicted that, judging from past experience, he would not have another exacerbation for at least ten months. A diet of 20 Gm. of carbohydrate, 30 Gm. of protein and 300 Gm. of fat was then given. Within forty-eight hours pain developed in the right foot. Shortly afterward the foot became swollen and tender. No medication was given, but the diet was changed to one consisting of 350 Gm. of carbohydrate, 60 Gm. of protein and 8 Gm. of fat. Within seventy-two hours all the signs and symptoms had disappeared. After he had been free from pain for one week he agreed to take the high fat diet again. Within two days he noticed the same symptoms and signs that he had felt during the previous test. The diet was changed to 440 Gm. of carbohydrate, 80 Gm. of protein and 120 Gm. of fat, and the symptoms disappeared within three days. At no time during the experiment were significant changes in the blood uric acid found. Seven of eight determinations gave values between 6.5 and 7.0 mg. per hundred cubic centimeters, and the eighth was only slightly lower than the others, 5.8 mg. The lowest value was present on the second day of the second period on a high fat diet.

The patient left the hospital thirteen days after the last bout had subsided. He was seen two months later in the outpatient department and reported that he had been free from symptoms during the intervening period.

CASE 4.—*History.*—N. G., a white youth, aged 16 years, admitted to the first medical service, Feb. 22, 1934, stated that in 1932, following a respiratory infection, hematuria, albuminuria, edema of the face and legs, and an increase in blood pressure had developed. It was noticed that tophi were present in the lobes of the ears at that time. The family physician advised the boy to be very moderate in exercising and to eat very little meat. He had rarely tasted liver and other internal organs. He had never used alcohol. During the latter part of December 1933 he suffered his first joint pains, which began in the right ankle. It was red, swollen and very painful. He could not allow the bedclothes to touch his foot. The attack lasted ten days and was followed by complete recovery. He was well for five weeks, and then the left wrist became swollen, tender and painful for one week. Following this there was no residual deformity or loss of function. He entered the hospital at the end of his third attack, which had begun one month after the previous one. This time the left ankle and big toe joint were involved. There was some pain and tenderness with limitation of motion.

His father and four males on his father's side had died of kidney trouble. No family history of gout was obtained.

Physical Examination.—He was well nourished and not acutely ill. Tophi were present in both pinnae. The pharynx was reddened. The heart sounds were regular, but the first sound at the mitral area was roughened, and the pulmonic second sound was greater than the aortic second sound. The blood pressure was 142 systolic and 100 diastolic. The left knee was red and swollen. It was warm and extremely painful when touched. There was no evidence that other joints were actively involved or that they had been affected by his previous bouts.

The specific gravity of the urine varied from 1.007 to 1.022, and no albumin or dextrose was found. The hemoglobin was 90 per cent (Sahli). The red blood cells numbered 4,250,000 and the white cells 9,050, with 67 per cent polymorphonuclear cells. The two hour urine concentration test showed a variation in specific gravity from 1.003 to 1.015. The night output of urine was about one third of the day output. The blood sedimentation rate was greatly increased when he was admitted and normal when he was discharged. The basal metabolic rate varied with therapy from minus 29 per cent to plus 3 per cent. No agglutinins for Streptococcus haemolyticus (A B 13) were found in the blood serum. The blood chemical examinations on admission revealed dextrose 143, calcium 11.9, inorganic phosphorus 4.4, cholesterol 153 and uric acid 7.6 mg. per hundred cubic centimeters of blood.

On roentgen examination the left wrist and the feet did not reveal punched out areas or signs of decalcification. No renal or bladder calculi were seen.

Course.—With few signs of the active attack remaining, he was placed on a diet of 225 Gm. of carbohydrate, 60 Gm. of protein and 70 Gm. of fat. Sodium salicylate and colchicine were given for one day. He felt better for a few days, but then several joints became involved. After six days the symptoms disappeared and he felt very well. During this period he was taking 2 mg. of colchicine daily.

After he had been clinically free from symptoms for one week the diet was changed to 50 Gm. of carbohydrate, 50 Gm. of protein and 250 Gm. of fat. The colchicine, 2 mg. daily, was continued during one week of this experimental period. The amount of fat was raised to 300 Gm., and six days later he had pain in the wrists and metacarpal joints. There was no swelling at this time. On the following day the pain increased and he felt poorly. The third day after the onset of the attack pain appeared in the right shoulder, and after another twenty-four hours there was swelling in the left wrist and hand. Then the joints of the right hand became involved, and within another day the joints of the left foot were sore. The pain persisted in all the joints that had already been affected. An injection of 50 cc. of 50 per cent dextrose intravenously gave a little relief, but this lasted only for an hour. The pain now was almost unbearable when he touched the bed. The diet was changed to one consisting of 350 Gm. of carbohydrate, 50 Gm. of protein and 50 Gm. of fat. Within two days he felt much better, although no medication of any kind was given.

During the time he was on the high fat diet the concentration of uric acid in the blood increased from a value of 8.6 to one of 16.0 mg. per hundred cubic centimeters, and there was a significant decrease in the rate at which uric acid was excreted in the urine.[10] There was no drop in the level of uric acid in the blood during the first eight days when he was taking the high carbohydrate diet. Determinations on four occasions gave values between 13.5 and 15.0 mg. per hundred cubic centimeters. Again it should be pointed out that the patient was free from symptoms during this period. Because of the persistent hyperuricacidemia, he was given sodium salicylate in doses of 2 Gm. every two hours. The blood uric acid dropped to 10 mg. per hundred cubic centimeters after this drug had been used for three days, and eight days later, with continuation of the therapy, it reached 6.5 mg., a value slightly lower than the one found on admission.

Five days after the conclusion of the experiment just described, while the patient was still on a diet low in fat (50 Gm.) and high in carbohydrate (350 Gm.) there was a recurrence of symptoms that lasted for five days. At this time the basal metabolic rate was minus 29 per cent. Thyroid extract (Parke, Davis & Co.) was given in doses of 0.03 Gm. three times a day to raise the basal metabolism and to aid in the excretion of uric acid. No other medication was used. During the remainder of his stay in the hospital he was free from symptoms except for occasional fleeting pains in the hands. Ingestion of 500 Gm. of liver did not aggravate his condition. The diet was kept at 500 Gm. of carbohydrate, 50 Gm. of protein and 50 Gm. of fat.

During three months of observation in the outpatient department, he has had only two or three days of mild pain.

COMMENT

The ingestion of high fat diets by these patients with gout resulted in certain metabolic and clinical changes that merit detailed discussion. The metabolic changes will be discussed first. Two of the patients took the diets high in fat for fairly long periods. In the blood of each of them the amount of uric acid at the end of the experiment was markedly higher than it had been at first. Patient 1 showed a uric acid concentration of 8 mg. per hundred cubic centimeters after he had been on the diet for eight days. This value was 60 per cent higher than the one found when he first presented himself at the clinic. Patient 4 took the diet for eleven days. On the last day of the test, 16 mg. of uric acid was present in each hundred cubic centimeters of his blood. This was double the concentration present at the beginning of the test. In two

other patients such extreme pain developed when they took the diet that it was necessary to discontinue the diet after three days. Neither of them showed any significant change in the blood uric acid. The results closely resemble those found in various investigations of persons not suffering from gout; high fat diets fed for a week or more regularly cause increases in the blood uric acid comparable to those observed in the experiments first described, while similar diets fed for shorter periods do not cause such changes. Patients with gout and normal subjects therefore show the same metabolic response to diets high in fat.

When, however, attention is centered on the rate at which the blood uric acid values decreased after the diets high in fat were replaced by those high in carbohydrate, a striking difference between patients with gout and those with other conditions is seen. In all previous articles dealing with such metabolic studies in nongouty subjects it has been stated that the blood uric acid returned promptly to normal when the high fat diets were discontinued. Neither of our subjects who ingested the diet for a long period showed a prompt change of this kind after the diet had been stopped. It was not until a diet high in carbohydrate had been fed to patient 1 for twenty-four days that the blood uric acid fell to the level present before the high fat diet was begun, and such high values were still present eight days after the diet in case 4 had been changed that we felt it desirable to use salicylates to hasten the excretion of uric acid. It seems to us that there is some resemblance between this marked persistence of increased blood uric acid values after the ingestion of high fat diets and the delay in the excretion of uric acid after feeding diets rich in purines,[11] or after injecting uric acid,[12] which patients with gout regularly show. It seems probable that all three changes result from the same underlying cause.

The most interesting observations in this study were the changes in the clinical symptoms of the patients. There was an exacerbation of the signs and symptoms when these patients were fed diets high in fat, and in a majority of the experiments the attacks developed within a few days after the patients had been placed on the diet. It should be stated explicitly that these clinical changes were fairly independent of changes in the uric acid content of the blood, for (1) they were noticed in experiments that were too short in duration to cause variations in the blood uric acid, and (2) in two cases with marked increases in the blood uric acid the symptoms decreased or disappeared while the blood uric acid was still high. These changes in symptoms might have been due to changes in the amount of uric acid in the tissues around the joints, but no evidence is available to prove such a theory.

The regularity with which this clinical response was observed led us to investigate the relationship between the ingestion of a high fat diet and the occurrence of joint symptoms in other conditions. No mention of the development of such symptoms is contained in the physiologic papers to which reference has already been made. Wright and Hubbard,[13] who fed diets high in fat to fifteen patients with chronic arthritis, did not encounter any noticeable exacerbation of the signs of the disease.[14] The results of a few experiments of our own were similar to those of the authors just mentioned. Four patients with chronic arthritis were fed diets high in fat for at least seven days, and there was no change in the clinical manifestations of the disease in any instance.

Since patients with gout appear regularly to experience an exacerbation of joint symptoms when they are fed diets high in fat, and since other groups of patients do not do so, we propose the following test for differentiating gout from various forms of chronic arthritis: Feed a diet consisting of from 250 to 350 Gm. of fat, 50 Gm. of protein and from 30 to 50 Gm. of carbohydrate for a period of from five to seven days. If within that time pain in the joints has developed, or if existing mild joint pains have markedly increased in severity, a diagnosis of gout must be carefully considered. The symptoms that may develop can be promptly relieved by feeding a diet high in carbohydrate and low in fat.

SUMMARY AND CONCLUSIONS

When diets high in fat and low in carbohydrate and protein were fed to patients with gout, the following effects were observed:

1. The concentration of uric acid in the blood increased and the amount excreted in the urine decreased if the diets were ingested for reasonably long periods. These results were approximately the same as those which have been found in the study of normal subjects.

2. When diets high in fat were withdrawn and replaced by diets low in fat and high in carbohydrate, the blood uric acid returned very slowly to the initial level. This result differs from experience with normal subjects, who under similar conditions show a prompt return of the uric acid in the blood to normal values.

3. Each time a patient was given a diet very high in fat, an attack of gout occurred within a few days. The joint symptoms subsided shortly after the patients were placed on a low fat-high carbohydrate diet.

4. These variations in the clinical symptoms were not directly dependent on changes in the uric acid concentration in the blood. Attacks were noted before increases in the blood uric acid occurred in some instances and disappeared while the blood uric acid was still high in others.

5. Similar diets did not cause exacerbations in the symptoms of patients suffering from chronic arthritis.

We feel justified in making the following recommendations as the result of these experiments:

1. The development or exacerbation of joint symptoms following the ingestion of a diet high in fat and low in carbohydrate and protein for several days may serve as a useful test in the differential diagnosis of gout.

2. Diets high in fat and low in carbohydrate should be avoided in the treatment of patients with gout.

40 North Street.

11. McClure, C. W., and Pratt, J. H.: A Study of Uric Acid in Gout, Arch. Int. Med. **20**: 481 (Oct.) 1917.
12. Folin, Otto; Berglund, H., and Derick, C.: The Uric Acid Problem: An Experimental Study on Animals and Man Including Gouty Subjects, J. Biol. Chem. **60**: 361 (June) 1924.
13. Wright, F. R., and Hubbard, R. S.: Dietetic Treatment of Arthritis with Special Reference to Maximum Fat Feeding, New York State J. Med. **21**: 403 (Nov.) 1921.
14. Wright, F. R.: Personal communication to the authors.

The Mentally Ill.—From the year 1880 to the year 1920 the general population increased, in round numbers, 110 per cent, and the population of the mentally ill in our public institutions 468 per cent.—White, W. A.: The Social Significance of Psychiatry, Thomas W. Salmon Memorial Lecture, read before the New York Academy of Medicine, April 19, 1935.

THE QUESTION OF HOMOPLASTIC SKIN GRAFTING

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The homoplastic transplantation of skin, in other words, the transference of skin from one individual to another, is a procedure about which there is much controversy. The subject receives such apparently favorable publicity that most laymen and likewise many physicians assume that the homoplastic transplanting of skin is a successful procedure, another accomplishment of modern science. The fact is that practically all recent scientific observation has proved that the homoplastic skin graft is unsuccessful.

These rather disconcerting statements deserve an explanation which we hope to give after reviewing a few salient facts. Practically speaking, skin grafting of any type was first accepted as a surgical procedure in 1869 after Reverdin [1] had reported his success with "pinch grafts." Following this, the various types of split skin and whole thickness skin grafts were described by Ollier, Thiersch, Wolfe and Krause. Along with the numerous reports of success with autoplastic transplants of skin, various efforts at homoplastic grafting were likewise reported.

Girdner [2] in 1881 reported a case in which skin was taken from a body six hours post mortem and placed on a granulating area on a boy aged 10 years. He reported that most of this graft sloughed because of infection. Bartens,[3] however, in 1888 reported a similar case, which he stated was successful.

Gatch [4] in 1911 reported the case of a Negro who received grafts from two donors. These homoplastic grafts all sloughed, while autoplastic grafts were highly successful on the same patient.

With the advent of knowledge concerning blood groups and the success of blood transfusion, interest arose in the thought that blood compatiblity might be a factor in homoplastic skin grafting. The transference of skin between individuals of the same blood group was termed iso-skin grafting, and Davis [5] has given several reports of success with isodermal grafts. In accounting for the failure observed in many of his cases he was inclined to assign infection as the cause, although he observed that infection was much less frequent in his autoplastic grafts. Neuhof,[6] Underwood,[7] Hoguet,[8] Masson [9] and Shawan [10] also expressed the view that satisfactory results in homoplastic skin grafting could be obtained when donor and recipient were in compatible blood groups.

Loeb,[11] however, considered it very improbable that the blood group of donor and host could be of any great significance. Blair and Brown,[12] who followed their cases very closely, stated that homoplastic grafts could be made to take but that in all cases after a few weeks the grafts sloughed away.

Faced by such conflicting reports, the average physician naturally has felt inclined to look on the homoplastic skin graft as a "noble experiment" worthy of trial when indicated. On several occasions we have faced a situation with relatives and friends eager to sacrifice small areas of skin to an unfortunate victim of a third degree burn. In most instances we have not accepted these offers, stating that the procedure probably would not be successful and might even be dangerous. Underwood [7] and Holman [13] both have reported what appeared to be serious allergic reactions following the application of isodermic grafts.

PERSONAL OBSERVATIONS

In five cases we have felt justified in attempting the homoplastic transplantation of skin. In brief, the results were as follows:

1. In most instances the grafts took; that is, they adhered and remained in place for a variable number of weeks. In no case, however, was a homoplastic graft permanently successful.

2. In one case a child was burned over such an extensive area that her survival for a period of approximately a month seemed miraculous. At that time a few small Thiersch grafts were taken from her mother, who was of the same blood group, and placed on the granulating surfaces of the child, together with several grafts cut from accessible areas of her own skin. The grafts took, homoplastic and autoplastic alike, but after several days the child became toxic with chills and septic temperature and died.

3. The other four patients all survived and eventually the wounds healed, but certainly the healing could not be taken as proof of successful iso-grafting. We observed definitely that these grafts sloughed away, usually in a gradual fashion over a period of days or weeks, while autografts in adjacent areas remained viable. Furthermore, it was quite apparent that the ultimate healing by cicatrization was markedly delayed in the areas which had received the homoplastic grafts.

4. We can readily understand why infection might be assigned as the cause of failure in such grafts. It is common knowledge that infection and slough may complicate any skin grafting procedure, though with proper technic the autoplastic skin graft is highly successful. In our experience the appearance of the gradually sloughing homoplastic graft is not unlike that of indolent infection, but infection probably is not the basic cause. More will be said of this.

5. In one instance a child presented extensive granulating areas three months following a burn on the back. Together with a few Thiersch grafts cut from her own skin, several similar grafts were transferred from the father, whose blood was compatible. All these grafts adhered completely and appeared to grow for six weeks, during which time the child's general condition remained good. The father's grafts then began slowly to melt away, while her own skin grafts remained

From the Division of Plastic Surgery, Indiana University School of Medicine.

1. Reverdin, J. L.: Greffe épidermique, Bull. de la Soc. impériale de chir. de Paris, Dec. 8 and 15, 1869, pages 493 and 511.
2. Girdner, J. H.: Skin Grafting with the Grafts Taken from the Dead Subject, M. Rec. **2:** 119 (July 30) 1881.
3. Bartens: Transplantation von einer Leiche, Berl. klin. Wchnschr., 1888, No. 32.
4. Gatch, W. D.: Report of a Case of Extensive Thiersch Skin Graft, Bull. Johns Hopkins Hosp. **22:** 84, 1911.
5. Davis, J. S.: Skin Transplantation, Johns Hopkins Hosp. Rep. **15:** 307, 1910; Some Problems of Plastic Surgery, Ann. Surg. **66:** 89 (July) 1917.
6. Neuhof, H.: The Transplantation of Tissues, New York, D. Appleton & Co., 1923.
7. Underwood, H. L.: Anaphylaxis Following Skin Grafting for Burns, J. A. M. A. **63:** 775 (Aug. 29) 1914.
8. Hoguet, J. P.: Skin Grafting, Ann. Surg. **71:** 220, 1920.
9. Masson, J. C.: Skin Grafting, J. A. M. A. **70:** 1581 (June 1) 1918.
10. Shawan, H. K.: Principle of Blood Grouping Applied to Skin Grafting, Am. J. M. Sc. **157:** 503 (April) 1919.
11. Loeb, Leo: Transplantation and Individuality, Physiol. Rev. **10:** 547 (Oct.) 1930.
12. Blair, V. P., and Brown, J. B.: The Use and Uses of Large Split Skin Grafts of Intermediate Thickness, Surg., Gynec. & Obst. **49:** 82 (July) 1929.
13. Holman, E., Protein Sensitization in Iso-Skin Grafting, Surg., Gynec. & Obst. **38:** 100 (Jan.) 1924.

healthy. After two more weeks it was apparent that the grafts from the father were undergoing progressive necrosis, mere fragments of the basal layers remaining. At this time a different area of granulation tissue received Thiersch grafts from the mother, whose blood was not compatible, and also several small grafts from the child's own skin. None of the mother's grafts grew. At the end of two weeks those which had first shown a tendency to take were undergoing rapid necrosis. During this interval the child's temperature, which previously had been normal, became septic, and toxic symptoms developed. Following this all granulations became unhealthy and healing progressed very slowly, even though the areas were given radical débridement to remove all remnants of the homoplastic grafts. With the aid of small Thiersch grafts from the remaining areas of her own available skin, healing eventually was sufficient to permit release from the James Whitcomb Riley Hospital four months following the initial graft.

COMMENT

From our own experience and a critical survey of the literature we are led to believe that most reports of success with homo-skin grafts arise from the fact that these grafts can and often do adhere and appear to grow for several weeks. In our cases, however, such grafts have not remained viable, their ultimate fate being a more or less delayed slough. Healing by cicatrization eventually occurs. These observations are in agreement with recent reports of others. Padgett,[14] however, although in general his observations agree with ours, has reported successful growth in skin transplants between identical twins. The grafts in one such instance were healthy and growing after three months.

Gillies[15] states that at the present time homografting in general is successful when the transplants involve avascular tissues, notably cartilage and cornea. He admits that homografts of skin, as commonly transplanted, are for all practical purposes unsuccessful. Certainly this is in accord with our experience. It does appear that blood compatibility may tend to favor the initial take of the graft. We have found, however, that ultimately these grafts not only are futile but are detrimental to healing or even dangerous to the life of the host.

It would seem that homotransplanting of tissues in man, for the most part, fails because of biologic incompatibility, the necrosis that occurs being due primarily to antagonism between the host and the foreign protein of the graft. The infection that may be observed is probably secondary and not the basic cause of the slough. We note with interest the report of Stone, Owings and Gey[16] concerning the successful homoplastic transplantation of glandular tissue by a technic in which the donor's tissue is first transferred to culture in vitro with the recipient's serum as a medium. This work is as yet in the experimental stage, but the reports are encouraging.

The fact remains that, as commonly practiced, homografting of skin is useless, deleterious and unnecessary. Massive destruction of skin is usually due to a burn, and the individual who survives such an injury will have sufficient intact surface to make healing possible with the aid of grafts from the patient's own skin.

In passing, we wish to emphasize the importance of early skin grafting in the management of such burns. By this procedure much deformity, disfiguration and suffering will be prevented and lives will be saved. Many severe burns are seen unhealed and septic after many months. In the management of such cases we wish to emphasize the value of ultraviolet therapy as reported by Gatch and Trusler.[17]

We do not deny the obvious fact that in many cases the homoplastic grafting of skin would be a great help if a practical solution of the problem could be discovered.

23 East Ohio Street.

14. Padgett, E. C.: Is Iso-Skin Grafting Practicable? South. M. J. **25:** 895-900 (Sept.) 1932.
15. Gillies, Sir Harold: Personal communication to the authors.
16. Stone, H. B.; Owings, J. C., and Gey, G. O.: Living Grafts of Endocrine Glands, Am. J. Surg. **24:** 386-395 (May) 1934.

THE TREATMENT OF VARICOSE VEINS

IS SYSTEMIC DISEASE A CONTRAINDICATION?

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This paper is based on a study of 1,000 consecutive patients treated for varicose veins in the circulatory clinic of the Boston City Hospital from late in 1930 to the close of 1933. It includes many patients suffering from coexisting systemic diseases such as diabetes and syphilis, and diseases of the heart, lungs and kidneys. The study was undertaken to determine whether it is dangerous or unwise to treat such patients by the injection of sclerosing agents or by this injection plus the operation of ligation.

The literature is controversial on this subject. Of those taking a cautious attitude may be quoted de Takáts,[1] Kilbourne,[2] Beckman[3] and McKinstry.[4] The conditions that they list as contraindications to treatment are old age, simple debility added to old age, nephritis, heart disease, hypertension, diabetes, tuberculosis, hyperthyroidism, severe focal infection, and the common cold. De Takáts believes that the treatment may bring on angina in a patient who is subject to this disease. He has also seen a case of miliary tuberculosis which he infers was caused or precipitated by the injection.[5] Kilbourne includes focal infection because of the danger of a metastatic phlebitis in the treated vein and for the same reason advises against injection immediately after the extraction of a tooth or during an acute cold or pharyngitis. A midway postion is maintained by Forestier,[6] O'Neil[7] and Schussler.[8] Forestier says: "Old persons with enfeebled health should not be given injections. . . . A previous medical examination is necessary, particularly as to the condition of the heart, the function of the kidneys (albuminuria) and the possibility of diabetes." O'Neil

17. Gatch, W. D., and Trusler, H. M.: Uses of Ultraviolet Light in the Preparation of Infected Granulation Tissue for Skin Grafting: The Value of Very Thick Thiersch Grafts, Surg., Gynec. & Obst. **50:** 478-482 (Feb.) 1930.

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1. de Takáts, Géza: Causes of Failure in the Treatment of Varicose Veins, J. A. M. A. **96:** 1111 (April 4) 1931.
2. Kilbourne, N. J.: Varicose Veins: Indications and Contraindications to Injections, Ann. Surg. **93:** 691 (March) 1931.
3. Beckman, Harry: Treatment in General Practice, Philadelphia, W. B. Saunders Company, 1931, p. 578.
4. McKinstry, G. C.: Review of Work on Varicose Veins for the Year 1933, Surg., Gynec. & Obst. **59:** 489 (Dec.) 1934.
5. "The case of a young girl, who with slight evening rises in her temperature received a few injections in her veins and died six weeks later of miliary tuberculosis, shows too well that a latent tuberculosis can be activated not only by foreign protein but by a mild irritative process such as the injection treatment."[1]
6. Forestier, Jacques: Varices of the Lower Limbs: Treatment by Obliterating Injections Based on Experience with More Than Four Thousand Injections, J. A. M. A. **90:** 1932 (June 16) 1928.
7. O'Neil, E. E.: The Injection Treatment of Varicose Veins, New England J. Med. **200:** 972 (May 9) 1929.
8. Schussler, Hermann, Jr.: The Chemical Obliteration of Varicose Veins, J. A. M. A. **90:** 1358 (April 28) 1928.

says: "Every patient is (first) to be examined to determine whether there exists any contraindication to the treatment."

Genevrier,[9] who introduced quinine and urethane as a sclerosing agent, makes no mention of any contraindication to its use. McPheeters[10] takes a positive and optimistic stand. He has summed up his attitude as follows:

> Neither a high nor a low blood pressure is a contraindication per se. If the patient has diabetes and bad varicose veins, he should be treated, but avoid the sugar solutions. If the patient has nephritis, avoid any solution which is irritant to the kidney. In cardiac conditions the patient's general condition is improved by the treatment of his varicose veins; but in no case should treatment be given when the patient is decompensated, or bedfast for any reason.

The latter caution is to avoid the danger of embolism from a propagating stagnation thrombus, which may form if a patient goes to bed after the injection.

THE STUDY[11]

At the inception of the circulatory clinic of the Boston City Hospital in 1929, the rule was made that no patient was to be treated unless he was first examined by the medical department "to rule out any disease that might contraindicate treatment." However, the injection treatment was early shown to be quite innocuous through the efforts of Dr. E. E. O'Neil of the circulatory clinic. It seemingly came about that the internists and the surgeons were equally puzzled as to what constituted a systemic contraindication to the treatment of the varices. It was therefore very soon that patients were treated whether or not they had other concomitant diseases, like those previously mentioned. The only condition that has remained a contraindication in the clinic is pregnancy, which condition I shall discuss later.

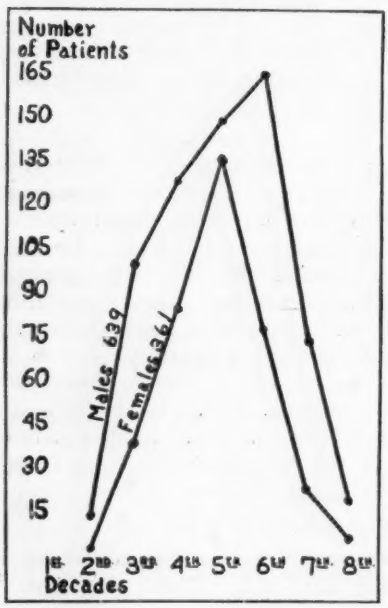

Chart 1.—One thousand consecutive patients with varicose veins: Age in decades at which patients appeared for treatment.

The records of these 1,000 treated patients are therefore rich in instances of coexisting systemic disease. The patients were examined by either the house officers or the visiting physicians, and, since the house officers in the medical clinic change every three months and the visiting physicians every month, there was a considerable number of men who handled these patients. The thoroughness of the examinations varied; all had at least their hearts and lungs examined. Almost every patient had the urine examined and the blood pressure taken. But frequently the history was brief. One may therefore presuppose that, if these records are in error, they are more apt to leave out systemic disease when it existed than otherwise.

The age of the patients at the time of first application for treatment was such as to make likely the frequent existence of conditions such as senility, arthritis, constipation, obesity, cholecystitis and, in the women, the menopause (chart 1). I feel that whether or not these diagnoses were placed in the record depended largely on the extent of the history and the individuality of the examiner. I therefore merely note that a great number of the patients suffered from these conditions.

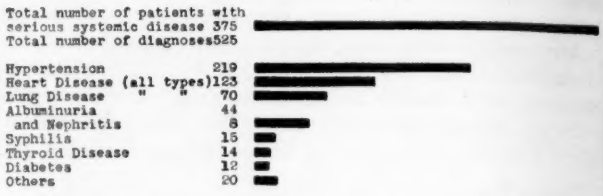

Chart 2.—One thousand consecutive patients with varicose veins: Incidence of serious systemic disease.

Considering the more serious diseases with more objective changes, we found an incidence of 375, or 37.5 per cent, of the 1,000 patients (chart 2). Of this number 219 patients were suffering from hypertension.[12] There were 123 patients with some disease of the heart, many of whom had hypertension with arteriosclerotic and hypertensive heart disease, while others were merely diagnosed as having myocarditis, auricular fibrillation or cardiac hypertrophy. There were but few cases diagnosed as angina pectoris, though heart pain was described in many of the histories of the patients with the other heart diseases. There were only eight cases labeled nephritis, with many more probably implied in the hypertensive or arteriosclerotic heart patients. An additional forty-four patients had albuminuria. There were seventy cases of respiratory disease, including chronic bronchitis, bronchiectasis, emphysema and tuberculosis, and one case of pneumoconiosis. There were four cases of extrapulmonary tuberculosis. There were three cases of alcoholic cirrhosis of the liver. Diabetes was diagnosed twelve times, syphilis fifteen times. (The blood was examined for syphilis in only 149 patients.) Diseases of the thyroid were diagnosed fourteen times and included toxic and nontoxic goiters, colloid goiters and hypothyroidism. Peptic ulcer was diagnosed five times. There were only five patients diagnosed as suffering from malnutrition or anemia or both. This figure is of course too low, as approximately from one third to one half of our patients are destitute and receive aid from the city welfare department. For the same reason the stated presence of carious teeth and other foci of infection may be passed over as altogether too low; they are actually very frequent in our patients. It is worthy of note that many of these patients were in middle or old age (chart 1).

As to the type of treatment and the substances used, every one of these 1,000 patients had received at least one injection of quinine and urethane, and, in some cases, as many as ninety-five injections were given.

9. Genevrier: Le traitement des varices et ulcères variquex par les injections coagulantes concentrées de sels de quinine, Soc. de méd. mil. franç. **15**: 169, 1921; Monde méd. **32**: 624, 1922.

10. McPheeters, H. O.: Varicose Veins, Philadelphia, F. A. Davis Company, 1931.

11. I am indebted to Dr. Cadis Phipps, professor of medicine at Tufts College Medical School, director of the First and Third Medical Services, and physician in chief, Third Medical Service of the Boston City Hospital, for advice concerning the medical problems involved.

12. The criterion used was a systolic blood pressure above 145 mm. of mercury. In most of the patients diagnosed as hypertensive, the blood pressure was tested several times.

The solution used contained 0.091 Gm. of quinine hydrochloride and 0.052 Gm. of urethane in each cubic centimeter of water.[13] The dose used by most of the surgeons was 0.5 cc. at the first visit and 2 cc. thereafter, although I have been using 5 cc. of this solution as a routine dose for the past two years. In addition to the quinine urethane, we have used 5 per cent sodium morrhuate in some cases [14] and, less frequently, sodium chloride (20 per cent), or sodium chloride (15 per cent) with dextrose (25 per cent), or varisol (invert sugar and sodium chloride). Also since early in 1932 we have used the ligation of the saphenous vein as a preliminary to the injections in some cases. This operation of ligation of the great saphenous vein was carried out seventy-five times in this series.[15]

In considering the possible systemic effect of the various sclerosing agents, their pharmacology might perhaps be discussed briefly. In the combination of quinine and urethane, one has to consider the action only of the former, as urethane (ethyl carbamic ester) is too weak and inconstant in the dosage used to be of any possible danger, especially as it is easily oxidized to urea. Aside from the possible idiosyncrasy for quinine, I realize that large doses, given intravenously, may result in a fall in blood pressure and cardiac depression, as well as in a depressing effect on the central nervous system; but in the dosage used for the treatment of varicose veins (from 0.182 to 0.455 Gm.), there is no reason to expect any general or systemic results, and apparently no definite ones have been reported. There seems no valid objection to the use of quinine in an individual suffering from nephritis, as the drug is not stored to any appreciable extent within the kidney and only one third is recovered in the urine. Heart disease is, of course, a very inclusive diagnosis and obviously there are cardiac conditions in which the injection treatment of veins would be contraindicated, aside from any possible systemic effect from the agent used. In regard to hypertension and hypertensive heart disease, my feeling is that, if there should be any systemic results from quinine, it would be of benefit in vasodilatation and lowering of blood pressure. The experience of Tunick and Nach,[16] and of Cooper [17] indicates that sodium morrhuate is entirely nontoxic. I usually use up to 15 cc., given at multiple points, but I have used 30 cc. at one sitting in one individual, with no untoward result. The use of sodium chloride in 15 or 20 per cent solution, invert sugar and the like would have a negligible systemic effect in the amounts administered, with the exception of the obvious contraindication to the use of sugar solutions in diabetes.

RESULTS AND COMMENT

From what has been stated, it may be noted that 375, or 37.5 per cent, of our 1,000 patients might have been labeled "treatment contraindicated." They were, nevertheless, treated. There were no deaths in the entire 1,000 cases. We have, of course, observed an occasional case of vomiting, dizziness or moderate allergic shock after the injection of quinine; but in this particular series, aside from occasional simple syncope, untoward general reactions were noted in only three patients, all women. The reactions consisted of vomiting and dizziness in one patient, uterine bleeding in one pregnant woman, and uterine bleeding in one nonpregnant woman:

CASE 1.—A woman, aged 47, with normal physical examination, aside from varices, had one injection of 0.75 cc. of the quinine urethane solution and a second injection of 2 cc. eleven days later. Vomiting and dizziness followed the second injection, and the treatment was discontinued.

CASE 2.—A woman, aged 42, with compensated rheumatic heart disease, had injections of 2 cc. of quinine urethane solution at weekly intervals. After the ninth injection she complained of vaginal bleeding. On questioning, she stated that she had had a few minutes of painless vaginal bleeding after each injection. During this time her menses came at regular intervals, as they had always done. She was a multipara who had been married for twenty-five years. Pelvic examination was normal.

CASE 3.—A woman, aged 43, had her last period four days before starting a series of injections for her veins. Quinine urethane was used at intervals of three weeks. A slight amount of vaginal bleeding occurred immediately after her fourth injection, when she was three months pregnant, and again after her fifth injection, when she was three and one-half months pregnant. She told of this five weeks later and the treatment was discontinued. She went on to a normal completion of her pregnancy.

None of the other 997 patients showed any general or remote effect important enough to be noted in the records. Of course many patients with hypertension later suffered from the usual accidents of this disease, such as cerebral hemorrhage or cardiac decompensation. Likewise, many of the patients known to have heart disease showed decompensation at some later time, as such patients generally do; but there was no single instance in which there seemed to be any relationship of the decompensation to the treatment. Many of the cardiac patients were undergoing treatment for slight or moderate decompensation during their injection treatment, and their course did not seem altered by the injections. The same can be said of the patients afflicted with pulmonary or kidney disease. No one patient seemed to be made worse by the injection: the few cases of pulmonary or extrapulmonary tuberculosis were not made worse by the injections, nor were those with thyroid disease affected. Likewise, no general or unusual local effect was noted in the diabetic patients.

From these results one may take a positive stand, and that is that severe systemic disease is not a contraindication to the injection treatment of varicose veins. McPheeters' exception to the rule (already quoted) is pertinent; viz., the avoidance of sugar solutions (dextrose or invert sugar) in diabetic patients, and kidney irritants (mercuric chloride or metaphen) in nephritic patients.

The general point may further be made that when a patient has one or more of these considered diseases it would benefit his general condition to be rid of varicose veins or their complications, ulcer and phlebitis. This is important for two reasons: first, the presence of discomfort or pain incident to varices and their complications, and, second, the presence of infection. It is probable that infection is constantly present in the varicose ulcer and in the entire limb that is the seat of such an ulcer; and it may be present in many cases of phlebitis. In injecting varices, one occasionally sees a serious phlebitis or cellulitis follow a technically perfect injection when neither ulcer nor phlebitis has been previously present. This resulting phlebitis or cellulitis

13. This is weaker than Genevrier's solution.[9] The formula for that solution, which is identical with the solution on the market in this country, consists of quinine hydrochloride 0.133 Gm. and urethane 0.067 Gm. in each cubic centimeter.

14. The sodium morrhuate used was supplied by Searle & Co.

15. Edwards, E. A.: The Treatment of Varicose Veins: Anatomical Factors of Ligation of the Great Saphenous Vein, Surg., Gynec. & Obst. **59**: 916 (Dec.) 1934.

16. Tunick, I. S., and Nach, Robert: Sodium Morrhuate as a Sclerosing Agent in the Treatment of Varicose Veins, Ann. Surg. **95**: 734 (May) 1932.

17. Cooper, W. M.: Use of Sodium Morrhuate in Injection Treatment of Varicose Veins, Am. J. Surg. **21**: 408 (Sept.) 1933.

has all the earmarks of a bacterial infection, and I believe they may be explained by the presence in varicose veins of what de Takáts calls "resting infection"; i. e., the presence of bacteria in the vein walls of large varices.[18] More obvious is the infection in the limb affected with varicose ulcer. It is frequent to observe large inguinal nodes on the affected side, which disappear as the ulcer heals. Considering the length of time a varicose ulcer may exist, the effect of its infection may be considerable. It may be profitable to add to the list of common foci of infection large varicose veins, ulcers and phlebitis.

When one applies this reasoning to decide whether or not to treat a diabetic patient, it becomes obvious that if the diabetic patient, of all people, is to avoid infection he should be treated for varices and their complications. From my practical experience, I can reiterate that I have never seen any harmful effect from treating the diabetic patient for varices.

McPheeters[10] of this country was the first to overthrow the notion that varices are not to be treated during pregnancy. He uses a solution of sodium chloride. Recently also Ritchie[19] of Edinburgh reported a group of pregnant patients treated with sodium morrhuate without ill effect. In this hospital we have neatly sidestepped the question by adhering to the rule that no pregnant woman is to receive injections for varicose veins. I admit that after the pregnancy is over the engorged veins of the lower extremities or vulva may entirely disappear, or at least diminish in size. For this reason alone it is certainly not proper to attempt a complete sclerosis of the varices during pregnancy. Frequently, however, the woman may suffer from severe pain in some individual segment of the varices, especially in the vulva or upper part of the thigh. Occasionally, too, these varices may be so huge and thin walled as to rupture and give rise to dangerous or even fatal hemorrhage during labor. In private practice I regularly inject such isolated segments of varices during pregnancy. I do not use quinine and urethane because of its oxytocic effect. I use 5 per cent sodium morrhuate, and I have never seen any bleeding or untoward effect, the patients going through their pregnancies as usual.

CONCLUSIONS

A study was made of 1,000 consecutive patients with varicose veins treated in the outpatient department of the Boston City Hospital. Seventy-five of the patients had a preliminary ligation. All were treated by the injection of quinine and urethane, or sodium morrhuate, and a few by solutions of sodium chloride and dextrose, or invert sugar.

Three hundred and seventy-five, or 37.5 per cent, of these patients suffered from at least one complicating serious systemic disease, and, according to previously noted criteria, treatment would have been contraindicated in them. There were no deaths. Aside from syncope there were only three reactions, all in women, consisting of vomiting and dizziness once and uterine bleeding twice.

A consideration of the pharmacology of the substances injected suggests no contraindication to their use in the presence of systemic disease. The removal of pain incident to varices, and ulcers and phlebitis, and the infection present at least in ulcers would seem of very definite value in the treatment of heart disease, hyperthyroidism, tuberculosis and especially diabetes.

The results obtained from this series of cases would suggest that the injection treatment of varicose veins may be safely employed even in the presence of conditions in which it was previously considered as contraindicated. I agree with the rule that no bedfast patient should be injected for varices.

During pregnancy, the treatment of individual segments of varices that are large or painful is desirable and safe, provided oxytocic substances, such as quinine, are avoided. Sodium morrhuate would seem to be the solution of choice.

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18. de Takáts, Géza: "Resting Infection," in Varicose Veins: Its Diagnosis and Treatment, Am. J. M. Sc. **184**: 57 (July) 1932.
19. Ritchie, Alison: The Treatment of Varicose Veins During Pregnancy, Edinburgh M. J. **40**: 157 (Nov.) 1933.

Clinical Notes, Suggestions and New Instruments

AXIAL TORSION OF A FULL-TERM PREGNANT UTERUS

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The pregnant uterus usually shows some degree of torsion during the latter half of pregnancy. Such torsion is merely an exaggeration of the physiologic rotation of the pregnant uterus. This usual type of rotation is readily seen at laparotomy, especially at term. It consists of a longitudinal twist of a few degrees. The twist is to the right in 80 per cent of patients and to the left in only 20 per cent. Torsion of this type has no major clinical significance.

True axial rotation of the pregnant uterus is rare and serious. Sudden rotation of the uterus on its long axis through more than 90 degrees may result in premature separation of the placenta, hemorrhage, profound shock and the symptoms of acute peritonitis. When it occurs, it is usually in association with uterine tumors or malformations.

Robinson and Duvall[1] have stated that "without uterine abnormalities there can be no torsion." They believe that extreme torsion, or axial rotation, in the absence of tumors or malformations, is due to a developmental asymmetry of the uterine musculature. The following instance of axial torsion of the uterus bears out this statement:

REPORT OF CASE

Mrs. M. S., aged 22, a primipara, admitted to the service of Dr. Irving Stein, Aug. 21, 1934, had a previous normal menstrual history. Her last menses began Nov. 16, 1933. Prenatal examinations showed no abnormalities of the uterus. Pelvic measurements showed a typical justo minor pelvis. She had had labor pains for eight hours before admission, at which time she was having moderately severe contractions every five minutes, lasting from thirty to forty seconds. Examination at this time revealed that the fetal head was still unengaged.

Two hours after admission the uterine contractions became more frequent, much more severe and lasted from sixty to ninety seconds. After three hours of severe pains, the patient was given one-fourth grain (0.016 Gm.) of morphine sulphate together with 1/150 grain (0.0004 Gm.) of scopolamine hypodermically. She obtained no relief and one hour later was complaining of constant and almost unbearable pain.

Abdominal examination at this time showed the uterus to be tense and firmly contracted with almost no periods of relaxation. The left round ligament was tense, easily palpable and plainly recognizable through the thin abdominal wall. At this time the left uterine horn and its round ligament insertion appeared to be rotated to the right and anteriorly, so that the uterine horn was almost in the midline. Rectal examination showed the cervix to be effaced, 1 cm. dilated. The membranes were intact and the fetal head was still unengaged.

During the next two hours the uterine contractions gradually became continuous. The patient complained bitterly of pain and of an inability to urinate in spite of an intense desire to do

From the Department of Obstetrics and Gynecology, Michael Reese Hospital.

1. Robinson, A. L., and Duvall, H. M.: J. Obst. & Gynaec. Brit. Emp. **38**: 55, 1931.

so. Close observation of the uterus during this period showed the left round ligament gradually shifting to the right until it had crossed the midline just above the level of the umbilicus, and the left uterine horn had rotated to the right until it had come to lie under the right costal arch. The cervix was still undilated and the fetal head was still unengaged. The uterus now became tonic and remained so. There was no evidence of peritoneal reaction or shock. The pulse and temperature were normal. A diagnosis of axial torsion of the uterus was made.

All external attempts at rotating the uterus to the left failed, even after the patient was given surgical anesthesia (ethylene).

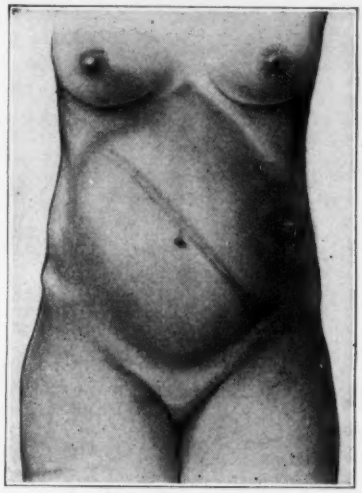

Fig. 1.—Axial torsion of a full term pregnant uterus in labor. The tense left round ligament can be seen crossing the midline of the abdomen above the level of the umbilicus. Its cornual insertion has been carried under the right costal margin by a clockwise rotation of 135 degrees.

The abdomen was incised in the midline and when the peritoneal cavity was opened the uterus was found to be rotated on its long axis. The point of rotation was at the junction between the cervix and the lower uterine segment; the direction was to the right, that is, clockwise viewed from below, and the degree of rotation was approximately 135 degrees. The right round ligament was posterior and somewhat relaxed, whereas the left one was tense and crossed the midline just above the umbilicus. The left horn of the uterus had come to lie under the anterior liver margin. This axial twist had dragged the vesical peritoneum and bladder to the right, producing marked bladder distortion and thus explaining the inability of the patient to urinate.

All attempts to untwist the uterus failed. A low cervical cesarean section was done, and immediately after the fetus and placenta had been removed the uterus rotated spontaneously to the left and assumed its normal relations. Examination of the uterine wall and placenta revealed no evidence of placental separation or hemorrhage. The uterus was then brought out through the abdominal incision and carefully inspected, but no abnormalities could be found. After suture of the uterine incision and replacement of the vesical reflection of the peritoneum, the uterus appeared perfectly normal in its position, axis and relations.

The patient made an uneventful recovery except for a slight wound infection and was discharged from the hospital on the sixteenth day. Involution of the uterus proceeded normally during this time, except for the fact that the uterus seemed markedly displaced to the right. Examination six weeks after delivery showed some dextroversion of the uterus. No other abnormalities could be detected. Involution was complete.

COMMENT

Axial torsion of the pregnant uterus has been known and described by veterinarians since 1662, this condition being rather common in domestic animals, especially cattle. It was first described in the human being by Virchow,[2] who found this condition at autopsy in 1863. Since then there have been many instances (more than a hundred) reported in which the axial torsion of the pregnant uterus occurred in association with fibroid tumors of the uterus or with uterine malformations.

Careful search of the available medical literature reveals only fifteen reports of axial torsion of the uterus at or near term not in association with uterine tumors or malformations. Litten[3] collected nine such reports in 1930 and added one of his own. Three other reports have been found prior to 1930 and two others have been published since Litten's publication. The present report is therefore the sixteenth to be published.

2. Virchow, Rudolf: Die Krankhaften Geschwuelste, Berlin **3**, 1863.
3. Litten, L.: Zentralbl. f. Gynäk. **54**: 2009 (Aug. 9) 1930.

An analysis of these sixteen reports shows that age and parity apparently play no rôle. The patients ranged from 20 to 40 years in age and had had from none to four pregnancies previous to the one during which the axial torsion occurred. One pregnancy was of six months', one of seven months', and two of eight months' duration. Two patients were in the last month of pregnancy and the remaining ten were at term.

The onset of the uterine torsion was sudden in six. None of these had reached term. In all of these, the symptoms were acute in onset and fulminating in character. The symptoms present in this group were those of shock and collapse following immediately on the onset of severe abdominal pain and vomiting. The clinical picture in each of these was that of an acute intraperitoneal crisis. In two of these the development was so rapid that death occurred within three hours, and the diagnosis was established only by postmortem examination. Two other patients died within a few hours after hysterectomy was performed; the remaining two in this group recovered following cesarean section.

The onset was gradual in five others and was not mentioned in the remaining five reports. In none of these ten were the symptoms either acute or fulminating. All of these ten patients recovered.

It would seem that axial torsion of the pregnant uterus is serious only when the torsion is rapid enough to produce acute circulatory disturbances in the uterus which result in peritoneal insult. In all ten of these patients the axial torsion developed during long and difficult labors, many of which were characterized as "obstructive" in nature.

The axial torsion was undiagnosed in fourteen, being found either at autopsy (in two) or on laparotomy (in twelve). Litten made the diagnosis in his patient from the abdominal manifestations alone. His patient was very thin, and the round ligament could be seen and felt as it passed from its inguinal canal insertion to the opposite side of the abdomen. There was a marked hydramnios present in association with an anencephalic monster. After a number of hours of hard and ineffectual labor, he ruptured the membranes artificially to relieve the uterine distention. The uterine torsion promptly disappeared and the patient delivered spontaneously. Subsequent postinvolutional roentgenographic examination of the uterus with the aid of iodized oil showed the uterus to be sinistraverted. This was undoubtedly an instance of gradual axial torsion of the pregnant uterus but unfortunately was not proved by direct visualization. As far as can be determined, the present example is the first in which a preoperative diagnosis of axial torsion of the pregnant uterus was confirmed by the finding of this condition during laparotomy.

Fig. 2.—Axial torsion of a full term pregnant uterus in labor. The drawing indicates the clockwise rotation with displacement of the path of the left round ligament and the torsion traction to which the bladder was subjected.

The degree of rotation of the uterus ranged from 90 degrees to 360 degrees. Here again a differentiation must be made between the "fulminating" group and the group in which the onset was "gradual." In the former, the rotation was 180 degrees or more in every instance, whereas in the latter group it was 180 degrees or more in only four of the ten patients. The direction of rotation was clockwise in twelve and counterclockwise in four. The level of rotation in the seven reports in which mention was made of this point was at the uterocervical junction in two, the midcervix in three and the cervicovaginal junction in two.

Two patients in the "fulminating" group died before treatment could be instituted; two others were treated by hysterectomy and died within a few hours; the remaining two recovered following cesarean section. Nine of the ten patients in the "gradual" group were treated by cesarean section; all recovered except one patient, in whom there had been previous attempts at version and extraction. This patient died three days later of septicemia. These attempts at version and extraction must be held at least partially responsible for this fatality. The development of a "gradual" axial torsion of the uterus would seem to be comparatively harmless to the patient if this condition is not permitted to continue over too long a period of time. The axial torsion was unsuspected in eight of the ten in the "gradual" group.

The various factors that have been described as being causative of axial torsion are postoperative adhesions, irregular fetal movements, weak abdominal muscles, umbilical hernia, manual labor and the like. Analysis of these sixteen reports seems to indicate that the cause of the "fulminating" type is unknown at present.

The one factor present in every one of the ten patients in the "gradual" group was a long, hard labor without progress. This common factor should not be overlooked in searching for the etiology of this condition. There must also be some predisposing factor such as a malfunction of the uterine musculature. At least some type of uterine asymmetry must be present. Such asymmetry was present in several cases, including the one here reported. The dictum of Robinson and Duvall that uterine asymmetry must be present to permit of axial torsion of the uterus explains the production of this condition in those patients in whom there are neither tumors nor malformations of the uterus nor gross lateral uterine deviations. However, Vogt,[4] Glinski,[5] and Lohlein give such accurate descriptions of the uteri in their reports that it must be conceded that these uteri were normal.

SUMMARY

1. The instance of axial torsion of a pregnant uterus at term here reported is the first in which the correct diagnosis was made from physical examination and confirmed by laparotomy.

2. A study of the sixteen reports gathered together leads to a division of this condition into two definite clinical groups.

3. The "fulminating" type is characterized by a sudden onset, with severe pain and the symptoms of shock and intraperitoneal insult. The degree of torsion is 180 degrees or more. The etiology is unknown. This type is rapidly fatal in most instances.

4. The "gradual" type is characterized by a gradual development. It frequently presents no symptoms or changes and is discovered only by accident at laparotomy. The degree of rotation varies from 90 to 200 degrees. This type follows long, severe, obstructive labor. The predisposing cause is probably an asymmetry of the uterine musculature.

104 South Michigan Avenue.

Axial Torsion of the Uterus

Case, Parity Age	Author	Length of Pregnancy: Onset	Symptoms	Labor	Diagnosis by	Treatment	Degree of Rotation	Point of Rotation	Direction	Outcome	Possible Etiologic Factors
1 iii 26	Syme, L.: Lancet **1**: 516, 1906	6 mos.; sudden	Pain, shock, collapse	0	Laparotomy	Hysterectomy	360	Cervicovaginal junction	Clockwise	Death in a few hours	
2 iii 33	Glinski, K.: Monatschr. f. Geburtsh. u. Gynäk. **31**: 431, 1910	9 mos.; sudden	Vomiting collapse, convulsions	0	Autopsy	.....	270	Midcervical	Clockwise	Death in 3 hours	Diastasis and umbilical hernia; very long cervix; irregular body movements
3 ii 20	Olow, N.: Monatschr. f. Geburtsh. u. Gynäk. **32**: 53, 1910	9 mos.; sudden	Pain, shock, collapse	0	Autopsy	.....	270	Midcervical	Clockwise	Death in 3 hours	Mechanical following hanging washing
4 iii 33	Fowler, G.: Long Island M. J. **5**: 228, 1911	7 mos.; sudden	Pain, vomiting, diarrhea	0	Laparotomy	Cesarean	90	.....	Clockwise	Recovery	Previous uterine fixation, rachitic pelvis
5 ii 27	Weinzerl, K.: Monatschr. f. Geburtsh. u. Gynäk. **53**: 29, 1922	Term sudden	Shock, pain, vomiting	0	Laparotomy	Hysterectomy	180	Cervicouterine junction	Counterclockwise	Death in few hours	Pendulous abdomen and excessive uterine mobility
6 ii 34	Weinzerl, K.: Zentralbl. f. Gynäk. **51**: 2059, 1922	Term	None	Long, hard	Laparotomy	Cesarean	200	.....	Clockwise	Recovery	Rachitic pelvis and long obstructive labor
7 v	Vogt: Zentralbl. f. Gynäk. **47**: 188, 1922	Term	None	Long, hard	Laparotomy	Cesarean	90	.....	Counterclockwise	Recovery	Pendulous abdomen and weak abdominal muscles
8 i 21	Bretz: Monatschr. f. Geburtsh. u. Gynäk. **59**: 69, 1925	Term gradual	Slight abdominal pain	Long	Laparotomy	Cesarean	180	Cervicovaginal junction	Clockwise	Recovery	Kyphosis and rickets
9 iii 31	Stork, F.: Zentralbl. f. Gynäk. **49**: 641, 1925	Term gradual	Severe pain for 12 days	Long, hard	Laparotomy	Cesarean	180	.....	Clockwise	Recovery	Irregular uterine contractions due to fetal movements
10 iv 44	Keiffer: Bruxelles méd. **6**: 314, 1926	Term gradual	Bleeding and intestinal obstruction	Hard, 15 hrs.	Laparotomy	Cesarean following attempted version	180	Cervix	Clockwise	Death 3 days later	Placenta praevia, long obstructive labor and postoperative adhesions
11 i 23	Kohler: Zentralbl. f. Gynäk. **61**, 1927	8 mos. gradual	Pain and tenderness for 9 days	Hard, obstructed	Laparotomy	Cesarean	100	.....	Clockwise	Recovery	Resistance due to rigid cervix
12 i 22	Koerner: Monatschr. f. Geburtsh. u. Gynäk. **82**, 1929	Term	None	Long	Laparotomy	Cesarean	90	.....	Clockwise	Recovery	Mechanical following hanging washing
13 ii 24	Litten, L.: Zentralbl. f. Gynäk. **14**: 2009, 1930	Term	None	Long	Abdominal examination	Rupture of membranes	180	.....	Counterclockwise	Recovery	Polyhydramnios
14 i 38	Feiner, D., and Kaldor, J.: Am. J. Obst. & Gynec. **20**: 88, 1930	Term	None	Long, hard	Laparotomy	Cesarean	160	.....	Counterclockwise	.....	Transverse position
15 ii 23	Anderodias, M., and Mahon, M.: Bull. Soc. d'obst. et de gynéc. **22**: 499, 1933	8 mos. sudden	Pain and bleeding	0	Laparotomy	Porro	90	.....	.....	Recovery	Premature separation of placenta
16 i 22	Reis and Chaloupka, 1934	Term gradual	Pain and dysuria	Long, hard	Abdominal examination	Cesarean	135	Cervicouterine junction	Clockwise	Recovery	Primary dextroversion

4. Vogt: Zentralbl. f. Gynäk. **47**: 188, 1922.
5. Glinski, K.: Monatschr. f. Geburtsh. u. Gynäk. **31**: 431, 1910.

Special Articles

THE EVALUATION OF SERODIAGNOSTIC TESTS FOR SYPHILIS IN THE UNITED STATES

REPORT OF RESULTS

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Plans for a study of the several serologic tests and modifications of preexisting methods developed in this country for the diagnosis of syphilis have already been published.[1] The purpose of this study was to determine the reliability of the several serodiagnostic methods used in the United States. The project has been sponsored by the U. S. Public Health Service at the request of the American Society of Clinical Pathologists. A committee consisting of two syphilologists, two clinical pathologists and one officer of the Public Health Service was appointed by the Surgeon General of the Public Health Service to organize and conduct the evaluation study. This work has been completed.

In general, the results achieved are a great credit to the participating serologists. The investigation has followed, as far as possible, the conditions met in ordinary practice. Twelve hundred specimens of blood and spinal fluid were collected in the different clinical groups in sufficient quantity to furnish each participating serologist with a comparable sample. Samples of blood and spinal fluid were collected from donors in various categories and distributed from central points of collection to the laboratories of participating serologists. A general invitation was extended to serologists in this country who had described an original serologic test or a modification of a preexisting test. Those who had described more than one serologic test delegated the performance of the second test to another laboratory in a different city.

The donors were carefully chosen and accurate records were made of the pertinent facts in the history and physical examination. Reasonable care was taken to insure that donors would be available for clinical reexamination in the event that discrepancies existed in the reports of the participants. Whole blood specimens were collected in dry sterile glass syringes under aseptic conditions, transferred to uniform glass tubes, and stoppered with sterile corks. Spinal fluid specimens were collected under aseptic conditions directly into uniform glass tubes.

Specimens were collected daily over a period of three months, carefully packed, and shipped in double metal mailing containers conforming to U. S. Postal Regulations. All specimens were transported either by special delivery mail or by special delivery air mail, the mailing time being so arranged as to assure simultaneous delivery at all points. There were 1,017 blood specimens each divided into fourteen comparable samples, and 220 spinal fluid specimens each divided into thirteen comparable samples. Dr. William A. Hinton of Boston did not participate in the examination of spinal fluids. A total of 14,238 comparable blood samples and 2,860 comparable spinal fluid samples were collected exclusive of those taken for serologic retesting. One of the samples of blood or spinal fluid from each donor was shipped as a control to a station of the Public Health Service to determine the physical condition on delivery. An important point in the evaluation plan was the assignment of a code letter as a substitute for the name of each participating serologist. The identity of the serologists performing the tests was,

TABLE 1.—*Sensitivity of Tests Based on Their Ability to Detect Syphilis in Blood Specimens from Primary, Secondary and Late Cases of Syphilis*

Serologists	Untreated Primary Syphilis, Group 1 (43 Cases)				Untreated Secondary Syphilis, Group 2 (65 Cases)				Late Syphilis with Varying Treatment Group 3 (307 Cases)				Total Cases of Syphilis Groups 1, 2 and 3 (415 Cases)				Specimens Hemolyzed or Physically Damaged	Anticomplementary Specimens
	Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports		
Brem*	41	6	22	53.7	64	..	64	100.0	305	43	203	66.6	410	49	289	70.5	5	..
Eagle	43	1	31	72.1	65	..	65	100.0	307	2	253	82.4	415	3	349	84.1	..	..
Hinton	42	2	34	81.0	64	..	64	100.0	303	15	256	84.5	409	17	354	86.6	6	..
Johns	43	..	25	58.1	63	..	62	98.4	307	..	198	64.5	413	..	285	69.0	2	..
Kahn	43	1	33	76.7	65	..	65	100.0	307	16	236	76.9	415	17	334	80.5	..	..
Kline	43	..	32	74.4	65	..	65	100.0	305	25	218	71.5	413	25	315	76.3	2	..
Kolmer*	41	2	27	65.9	65	..	65	100.0	305	11	220	72.1	411	13	312	75.9	4	..
Kurtzt	41	1	34	82.9	65	..	65	100.0	305	3	257	84.3	411	4	356	86.6	4	..
Lufkin and Rytz	43	..	31	72.1	65	..	64	98.5	304	..	254	83.6	412	..	349	84.7	3	..
Reint	41	4	33	80.5	63	..	63	100.0	306	16	254	83.0	410	20	350	85.4	5	..
Ruediger*	40	1	33	82.5	65	..	65	100.0	302	4	261	86.4	407	5	359	88.2	8	..
Williams (Army)*	43	2	30	69.8	65	..	65	100.0	307	43	178	58.0	415	45	273	65.8	..	3
Weiss	41	..	29	70.7	63	..	62	98.4	298	5	188	63.1	402	5	279	69.4	13	..

* Performed modification of complement fixation tests.
† Performed Kahn presumptive test.
‡ Performed Kline exclusion test.

Read at a round table conference of the American Society of Clinical Pathologists in Atlantic City, N. J., June 7, 1935.

1. Cumming, H. S.; Hazen, H. H.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A.: The Evaluation of Serodiagnostic Tests for Syphilis in the United States, J. A. M. A. **103**: 1705 (Dec. 1) 1934.

therefore, unknown to the members of the committee until after the evaluation had been completed.

Samples were sent to the following serologists:

Walter V. Brem, Los Angeles.
Harry Eagle, Philadelphia.
William A. Hinton, Boston.
F. M. Johns, New Orleans.
Reuben L. Kahn (performing Kahn standard diagnostic test), Ann Arbor, Mich.
B. S. Kline (performing Kline diagnostic test), Cleveland.
John A. Kolmer, Philadelphia.
M. B. Kurtz (performing Kahn presumptive test), Lansing, Mich.
N. H. Lufkin and F. Rytz, Minneapolis.
Charles R. Rein (performing Kline exclusion test), New York.
E. Henry Ruediger, San Diego, Calif.
Capt. W. C. Williams (U. S. Army), Washington, D. C.
Emil Weiss, Chicago.

Drs. Brem, Kolmer and Ruediger, and Captain Williams performed complement fixation tests. All others performed flocculation tests. All of these workers are to be complimented for the spirit of cooperation and the interest shown by them during the entire study. In some instances the work was done at great sacrifice of individual time and effort.

TABLE 2.—*Specificity of Tests Based on Their Ability to Exclude Syphilis in Blood Specimens from Normal Presumably Nonsyphilitic Individuals*

	Normal Presumably Nonsyphilitic Individuals (152 Cases)						
Serologists	Total Specimens Examined	Doubtful Reports	False Positive Reports	Percentage of False Positive Reports	Percentage of Negative Reports	Specimens Hemolyzed or Physically Damaged	Anticomplementary Specimens
Brem*.....	147	..	..	...	100.0	5	..
Eagle.....	151	2	3	2.0	98.0	1	..
Hinton.....	150	1	1	0.7	99.3	2	..
Johns.....	151	..	5	3.3	96.7	1	..
Kahn.....	149	1	..	...	100.0	3	..
Kline.....	146	..	..	...	100.0	6	..
Kolmer*.....	150	..	..	...	100.0	2	..
Kurtz†.....	152	2	5	3.3	96.7	..	..
Lufkin and Rytz..	151	..	2	1.3	98.7	1	..
Rein‡.....	151	10	1	0.7	99.3	1	..
Ruediger*.....	148	3	1	0.7	99.3	4	..
Williams (Army)*.	151	1	..	...	100.0	1	..
Weiss.....	147	1	1	0.7	99.3	5	..

* Performed modification of complement fixation tests.
† Performed Kahn presumptive test.
‡ Performed Kline exclusion test.

The fifteen clinical groups from which donors were selected and the number of donors included in each were as follows:

Blood Specimens:

43 untreated patients with primary syphilis.
65 untreated patients with early secondary syphilis in the eruptive stage.
307 patients with late syphilis,[2] with varying amounts and kinds of treatment.
152 normal presumably nonsyphilitic individuals.
25 normal presumably nonsyphilitic women, both during menstruation and in the intermenstrual interval.
46 presumably nonsyphilitic patients with acute febrile diseases (temperature above 38 C., or 100 F.) or physically induced artificial fever above 40.5 C. (105 F.).
51 presumably nonsyphilitic patients with jaundice due to various causes.
50 presumably nonsyphilitic patients with leprosy.
36 presumably nonsyphilitic patients with malaria.
62 presumably nonsyphilitic patients with malignant neoplastic disease.
53 presumably nonsyphilitic patients with tuberculosis.
54 presumably normal pregnant women.
10 syphilitic or nonsyphilitic patients, from each of whom a larger volume of blood was collected and divided into forty-two samples. Three of these were submitted simultaneously to each serologist, each sample under a different key number.

Spinal Fluid Specimens:

110 patients with syphilis of the central nervous system.
110 patients with nonsyphilitic psychoses and other mental abnormalities.

2. For purposes of this study the term "late syphilis" is used to designate syphilis of two or more years' duration. This follows the generally accepted arbitrary classification.

TABLE 3.—*Sensitivity of Blood Tests Based on Ability to Detect Syphilis Contrasted with the Specificity of Blood Tests Based on Ability to Exclude Syphilis*

	Percentage of Negative Reports in Normal Nonsyphilitic Individuals (152 Cases)	Percentage of Positive Reports in Syphilitic Patients			
Serologists		Untreated Primary Syphilis (43 Cases)	Untreated Secondary Syphilis (65 Cases)	Late Syphilis with Varying Amounts of Treatment (307 Cases)	Total Syphilis (415 Cases)
Brem*.....	100.0	53.7	100.0	66.6	70.5
Eagle.....	98.0	72.1	100.0	82.4	84.1
Hinton.....	99.3	81.0	100.0	84.5	86.6
Johns.....	96.7	58.1	98.4	64.5	69.0
Kahn (presumptive)†.....	96.7	82.9	100.0	84.3	86.6
Kahn (standard diagnostic)	100.0	76.7	100.0	76.9	80.5
Kline (exclusion)‡.....	99.3	80.5	100.0	83.0	85.4
Kline (diagnostic).....	100.0	74.4	100.0	71.5	76.3
Kolmer*.....	100.0	65.9	100.0	72.1	75.9
Lufkin and Rytz.....	98.7	72.1	98.5	83.6	84.7
Ruediger*.....	99.3	82.5	100.0	86.4	88.2
Williams (Army)*.....	100.0	69.8	100.0	58.0	65.8
Weiss.....	99.3	70.7	98.4	63.1	69.4

* Performed modification of complement fixation tests.
† Performed by Dr. M. B. Kurtz, Lansing, Mich.
‡ Performed by Dr. Charles R. Rein, New York.

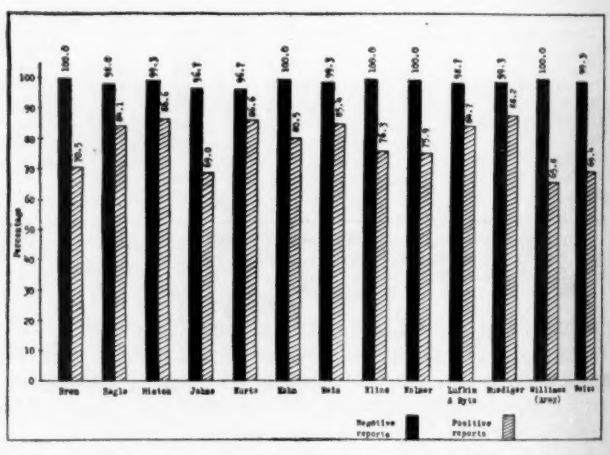

Chart 1.—Sensitivity of blood tests based on the percentage of positive reports in a group of 415 patients with syphilis contrasted with the specificity of blood tests based on the percentage of negative reports in a group of 152 normal presumably nonsyphilitic individuals.

EVALUATION OF SENSITIVITY

The three groups of syphilitic donors of blood specimens permit an estimation of the degree of sensitivity of the thirteen serologic procedures. The early primary and the late syphilis groups are especially suitable for

this purpose. As would be expected, almost all the tests were positive in the group of donors with untreated secondary syphilis. The percentage of positive reports of the thirteen tests in each of these three groups together with the percentage of positive reports of the serologic tests for all syphilitic blood specimens will be found in table 1. The percentage of positive reports was obtained by dividing the number of positive reports by the total number of specimens examined. The specimens examined by each serologist represent the total number submitted in each group of syphilitic donors less the number reported as hemolyzed, as physically damaged or as not received.

The committee has found the evaluation of doubtful reports impracticable. A logical method is lacking for determining the amount of credit to be assigned or the deduction to be made in respect to such reports. There was no general agreement in the proposals offered by the participating serologists for the evaluation of this group of reports. Throughout this study, specimens giving doubtful reactions are included in the columns headed "specimens examined" but are not counted as positive or partially positive reports in determining percentages of positive reports or percentages of negative reports. Although in this study the doubtful reports have been given a negative rating, the committee recognizes that in clinical practice a doubtful report may often be of value.

When more than half of the serologic reports on a specimen of blood from a patient suspected of having syphilis were negative, the patient, with a few exceptions, was subjected to a thorough clinical reexamination and to any indicated special examinations.

case. The result of this is a slight lowering of the general rate of sensitivity, affecting all participating serologists equally.

EVALUATION OF SPECIFICITY

The specificity of the various serologic tests has been estimated from the group of blood specimens from normal presumably nonsyphilitic individuals. All of these

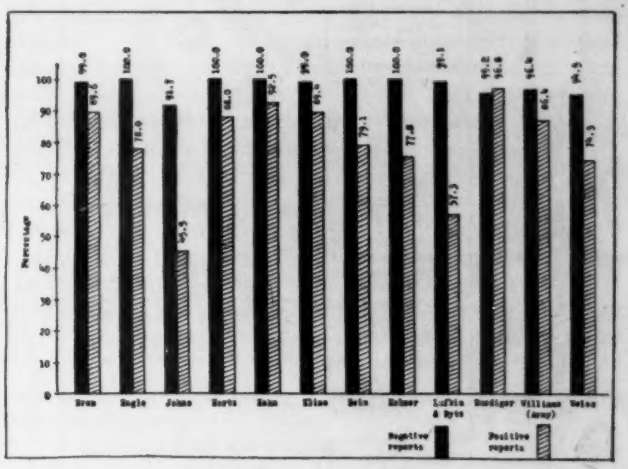

Chart 2.—Sensitivity of spinal fluid tests based on the percentage of positive reports in a group of 110 neurosyphilitic patients contrasted with the specificity of spinal fluid tests based on the percentage of negative reports in a group of 110 nonsyphilitic patients with other mental diseases.

donors were included in a selected group in which the prevalence of syphilis was believed to be lower than the average for the whole population. The group consisted entirely of medical students and members of the staff of a medical school and hospital. The total number of specimens examined, the number of false positives reported by the thirteen serologists, the percentage of false positive tests, and the percentage of negative reports are given in table 2.

The donors in the normal presumably nonsyphilitic group on whom more than one positive or more than two doubtful results were reported were serologically reexamined by the participating serologists and given a clinical reexamination by one or more syphilologists.

TABLE 4.—*Sensitivity and Specificity of Tests Based on Their Ability to Detect or Exclude Syphilis in Spinal Fluid Specimens from Neurosyphilitic Patients and from Presumably Nonsyphilitic Patients with Other Mental Diseases*

	Sensitivity of Spinal Fluid Tests (110 Neurosyphilitic Patients)						Specificity of Spinal Fluid Tests (110 Nonsyphilitic Patients)						
Serologists	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Damaged	Anticomplementary Specimens	Total Specimens Examined	Doubtful Reports	False Positive Reports	Percentage of False Positive Reports	Percentage of Negative Reports	Specimens Damaged	Anticomplementary Specimens
Brem*	96	1	86	89.6	14	..	96	..	1	1.0	99.0	14	..
Eagle	109	4	85	78.0	1	..	110	..	..	...	100.0	..	..
Johns	110	..	50	45.5	..	..	109	2	9	8.3	91.7	1	..
Kahn	107	2	99	92.5	3	..	110	3	..	...	100.0	..	..
Kline	104	2	93	89.4	6	..	105	..	1	1.0	99.0	5	..
Kolmer*	108	3	84	77.8	2	..	107	..	..	...	100.0	3	..
Kurtz†	108	7	95	88.0	2	..	108	..	..	...	100.0	2	..
Lufkin and Rytz	110	4	63	57.3	..	..	110	1	1	0.9	99.1	..	..
Rein‡	110	11	87	79.1	..	..	109	..	..	...	100.0	1	..
Ruediger*	94	2	91	96.8	16	..	83	3	4	4.8	95.2	27	..
Williams (Army)*	110	7	95	86.4	..	1	110	4	4	3.6	96.4	..	..
Weiss	109	2	81	74.3	1	..	109	1	6	5.5	94.5	1	..

* Performed modification of complement fixation tests.
† Performed Kahn presumptive test.
‡ Performed Kline exclusion test.

TABLE 5.—*Results of Serologic Tests for Syphilis on Blood Specimens from Presumably Nonsyphilitic Patients with Leprosy, Tuberculosis, Malignant Neoplastic Disease, Acute Febrile Diseases or Physically Induced Artificial Fever, Malaria, Jaundice and Pregnancy*

Serologists	Percentage of False Positive Tests in Normal Group (Table 2)	Leprosy (50 Cases)					Tuberculosis (53 Cases)					Malignant Neoplastic Disease (62 Cases)					Fever, Natural or Induced (46 Cases)					Malaria (36 Cases)					Jaundice (51 Cases)					Pregnancy (54 Cases)				
		Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged	Total Specimens Examined	Doubtful Reports	Positive Reports	Percentage of Positive Reports	Specimens Hemolyzed or Physically Damaged
Brem*.....	...	50	6	22	44.0	..	52	..	1	1.9	1	60	1	1	1.7	2	45	..	1	2.2	1	35	3	5	14.3	1	51	..	..	..	..	54	..	..	..	..
Eagle.....	2.0	50	..	36	72.0	..	53	2	1	1.9	..	60	..	1	1.7	2	44	1	..	..	1	33	3	4	12.1	3	49	..	..	..	2	54	..	..	..	..
Hinton.....	0.7	50	8	20	40.0	..	53	7	3	5.7	..	61	3	2	3.3	1	43	3	1	2.3	3	36	4	4	11.1	..	51	3	..	..	..	53	2	1	1.9	1
Johns.....	3.3	50	..	29	58.0	..	53	..	3	5.7	..	62	..	..	..	..	46	..	2	4.3	3	35	..	4	11.4	1	51	1	1	2.0	..	54	..	2	3.7	..
Kahn.....	...	50	1	30	60.0	..	52	2	1	1.9	1	62	..	..	..	..	46	..	..	..	..	35	..	4	11.4	1	51	1	..	..	..	54	1	..	..	..
Kline.....	...	50	1	33	66.0	..	52	..	1	1.9	1	62	..	..	..	..	45	..	..	..	1	35	1	5	14.3	1	51	..	1	3.9	..	54	..	..	..	..
Kolmer*.....	...	50	1	32	64.0	..	51	..	1	2.0	2	62	..	1	1.6	..	45	..	1	2.2	1	36	1	7	19.4	..	50	1	..	..	..	54	..	..	..	..
Kurtz†.....	3.3	50	4	38	76.0	..	52	3	4	7.7	1	62	..	..	..	..	46	..	1	2.2	..	36	2	6	16.7	..	51	3	2	3.9	..	54	..	1	1.9	..
Lufkin and Rytz	1.3	50	..	33	70.0	..	53	..	4	7.5	..	62	..	6	9.7	..	45	..	4	8.9	1	36	1	4	11.1	..	51	1	1	2.0	..	54	1	..	..	..
Reint.....	0.7	50	6	34	68.0	..	53	7	1	1.9	..	62	2	..	..	..	46	6	..	..	..	36	7	7	19.4	..	51	2	2	3.9	..	54	7	..	..	..
Ruediger*.....	0.7	50	6	31	62.0	..	53	..	4	7.5	..	62	..	1	1.6	..	45	..	1	2.2	1	34	3	7	20.6	2	50	1	1	2.0	1	52	2	1	3.8	2
Williams (Army)*...	...	50	9	21	42.0	..	53	3	1	1.9	..	61	1	1	1.6	1	46	3	..	..	..	35	3	6	17.1	1	50	1	1	..	..	54	2	..	..	..
Weiss.....	0.7	50	5	26	52.0	..	53	..	..	..	..	61	..	1	1.6	..	44	3	..	..	2	35	..	3	8.6	1	49	2	..	..	2	54	..	..	..	..

* Performed modification of complement fixation tests.
† Performed Kahn presumptive test.
‡ Performed Kline exclusion test.

Only the original serologic report was considered in computing the percentage of negative reports.

In table 3 and chart 1 will be found a summary showing the sensitivity of blood tests based on ability to detect syphilis contrasted with the specificity of blood tests based on ability to exclude syphilis.

EVALUATION OF THE REPORTS ON SPINAL FLUID SPECIMENS

In table 4 and chart 2 may be found the total number of specimens of spinal fluid examined by the twelve participating serologists who examined spinal fluid specimens, the number of positive reports in syphilitic patients, the number of false positive reports, and the percentage of positive and negative results.

Clinical and serologic reexaminations were made on all presumably nonsyphilitic patients with psychoses or other mental abnormalities having more than one positive or more than two doubtful reports. Only a clinical confirmatory reexamination was made on patients with syphilis of the central nervous system whose serologic reports were predominatingly negative.

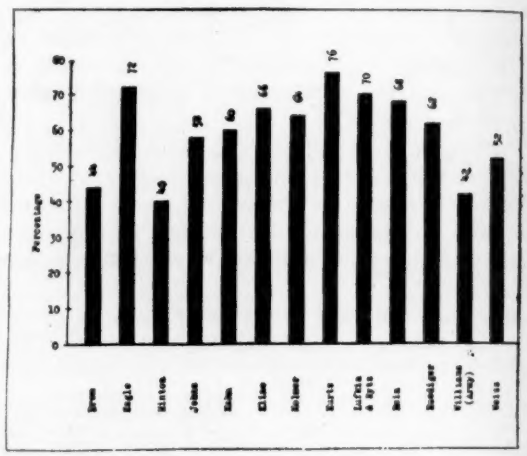

Chart 3.—Percentage of positive serologic tests for syphilis found in blood specimens from presumably nonsyphilitic patients with leprosy.

SPECIAL SEROLOGIC PROBLEMS

In addition to an evaluation of the various serodiagnostic methods as applied to normal presumably nonsyphilitic and to syphilitic individuals, the members of the committee have thought it desirable to obtain data on the results of tests on blood specimens from groups of patients suffering from certain clinical conditions other than syphilis. The presence of syphilis in the donors of these groups has been excluded with reasonable certainty, although this could not be absolutely assured in every case. Because of the meagerness of the data obtained from these special studies, the results have not been included in the serologic evaluation. For this reason the results of the serologic examinations in these special groups are reported separately in table 5. The committee is impressed with the need for further serologic studies in certain of the groups, with a view to determining the possibility of nonspecific positive serologic reactions or an increased proportion of positive reactions in syphilitic individuals. The percentages of false positive reports in presumably nonsyphilitic normal donors, as shown in table 2, are compared in table 5 with the percentages of positive results reported for the special disease conditions studied. Attention is particularly directed to the

great difference in these percentages in the leprosy group (chart 3). This difference was greatest in the leprosy patients and considerably less in the malaria group. The patients on whom discrepant reports had been made, except the lepers, were with few exceptions reexamined serologically and clinically in the same manner as the normal presumably nonsyphilitic donors on whom discrepant reports had been made. The presumably nonsyphilitic donors with leprosy were not reexamined serologically but were reexamined clinically. Special histories were also taken in order to eliminate frambesia as a factor in leprosy patients who had previously dwelt in the tropics.

Another of the special studies was concerned with the possible influence of menstruation on serologic reactions. The serologic observations are contained in table 6.

DAMAGE TO SPECIMENS

There were very few instances of hemolyzed or anticomplementary specimens, or leakage due to broken tubes. The leakage of spinal fluid specimens occurred chiefly in those sent to California by air mail. It has been suggested that this leakage was due to changes in atmospheric pressure in the high altitudes (14,000 to 18,000 feet) to which these specimens were subjected.

CONCLUSIONS

The ideal serodiagnostic tests for syphilis should possess both specificity and sensitivity. They should be adaptable to the diverse and at times unfavorable conditions existing in ordinary practice. Tests that are reliable when performed with hemolyzed, anticomplementary or contaminated serums or spinal fluid specimens are obviously of more value to the clinician than those which cannot be used under such conditions.

This study indicates relatively equal value to the clinician of efficient complement fixation tests and efficient flocculation tests as applied to either blood or spinal fluid specimens. This study further reveals that, while most flocculation tests are approximately equal in value to complement fixation tests when applied to spinal fluid specimens, it is apparent that certain of the flocculation methods are relatively inadequate.

The studies of the committee, based solely on the information derived from the evaluation of these reports, show that if two tests are to be performed it is immaterial whether two complement fixation tests, two flocculation tests or a combination of one flocculation test and one complement fixation test are selected.

As a secondary consideration, in the choice of one or more tests for general use, due regard should be given to the cost, rapidity and ease of performance. No consideration was given to these factors in this evaluation project. Certain tests that may be performed rapidly on blood specimens appeared to yield results comparable to those obtained with tests requiring a longer period for their performance.

There is some evidence that a properly performed, highly sensitive flocculation test might be used as a routine for the purpose of excluding the likelihood of syphilis. If a negative result is obtained by such a method, it is quite likely that it will be negative by any other method. If the test yields a positive result it should be repeated and compared with one or more highly specific flocculation or complement fixation tests.

TABLE 6.—*Results of Serologic Tests for Syphilis on Blood Specimens from Normal Presumably Nonsyphilitic Women During Menstruation and in Intermenstrual Interval*

	During Menstruation (25 Cases)							Intermenstrual Interval (25 Cases)						
Serologists	Total Specimens Examined	Doubtful Reports	False Positive Reports	Percentage of False Positive Reports	Percentage of Negative Reports	Specimens Hemolyzed or Physically Damaged	Anticomplementary Specimens	Total Specimens Examined	Doubtful Reports	False Positive Reports	Percentage of False Positive Reports	Percentage of Negative Reports	Specimens Hemolyzed or Physically Damaged	Anticomplementary Specimens
Brem*	25	..	..	...	100.0	..	..	24	1	..	...	100.0	1	..
Eagle	25	..	..	...	100.0	..	..	25	..	..	...	100.0	..	..
Hinton	24	1	..	...	100.0	1	..	25	2	..	...	100.0	..	..
Johns	25	..	..	...	100.0	..	..	23	..	..	...	100.0	2	..
Kahn	25	..	..	...	100.0	..	..	24	..	..	...	100.0	1	..
Kline	25	..	..	...	100.0	..	..	25	..	..	...	100.0	..	..
Kolmer*	25	..	..	...	100.0	..	..	25	..	..	...	100.0	..	..
Kurtz†	25	..	1	4.4	96.0	..	..	25	..	..	...	100.0	..	..
Lufkin and Rytz	25	..	3	12.0	88.0	..	..	25	..	..	...	100.0	..	..
Rein‡	24	1	..	...	100.0	1	..	25	2	..	...	100.0	..	..
Ruediger*	25	..	..	...	100.0	..	..	25	..	..	...	100.0	..	..
Williams (Army)*	25	1	..	...	100.0	..	..	25	1	..	...	100.0	..	..
Weiss	25	..	..	...	100.0	..	..	25	..	1	4.0	96.0	..	..

* Performed modification of complement fixation tests.
† Performed Kahn presumptive test.
‡ Performed Kline exclusion test.

The results of this study indicate that, in spite of the difference in symbols that are customarily used in reporting the results of various tests, it is satisfactory to report results as merely "positive," "doubtful" or "negative." The committee recommends this simple method of reporting qualitative tests to all serologists. Its adoption should be of great help to the clinician.

The committee appreciates that the actual serologic testing performed in this study has been done under relatively ideal conditions and that the results do not necessarily compare with those obtained from serologic methods as generally employed.

All the material contained in this report, together with the charts and tables from which these data were derived, and abstracts of the serologic methods employed, will appear in a forthcoming publication of the United States Public Health Service. For further information the reader should write to the Surgeon General, U. S. Public Health Service, Washington, D. C.

GLANDULAR PHYSIOLOGY AND THERAPY

THE ADRENAL MEDULLA

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NOTE.—*This article and the articles in the previous issues of* THE JOURNAL *are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed, the series will be published in book form.*—ED.

Glandular therapy is based chiefly on the capacity of hormones or other products, obtained from endocrine glands, to substitute for deficiency or absence of function of those organs in the body. Although the adrenal medulla has been studied extensively, both experimentally and clinically, its function has not been explained satisfactorily. Yet its hormone, epinephrine, is one of the most commonly used drugs in the practice of medicine and surgery. The present purpose, therefore, can best be accomplished by discussing available physiologic and pharmacologic information in the light of or with special emphasis on its therapeutic application. In view of the vast literature on the subject, no attempt will be made to include a comprehensive review or to quote original references for all the sources of information. These can be found in readily accessible reference books.[1] For detailed anatomic and other information the reader is referred to Biedl,[2] and for cytologic description to the chapter on the suprarenal bodies in Special Cytology.[3]

The mammalian adrenal gland represents an anatomic union of two glands, different in origin, structure and physiologic significance. In certain lower forms (e. g., elasmobranchi) these two glands exist as separate structures. The interrenal body corresponds to the cortex of the mammalian adrenal and the paired chromaffin bodies, in intimate anatomic relation with the sympathetic ganglions, correspond to the medulla. So little is definitely known concerning the function of either that, from a clinical standpoint, the suprarenal body has been regarded as a single gland. Whether or not there is a functional correlation between the medulla and the cortex which surrounds it is not known. A hormone (epinephrine) has been isolated in crystalline form from the medulla and the presence of a hormone (interrenalin) in the interrenal gland substance or cortex has been demonstrated by the late Professor G. N. Stewart and myself since 1925, and this has been confirmed more recently by a number of other workers, although it is not yet possible to obtain it in pure form.

The cells of the adrenal cortex are of mesoblastic origin. The rounded or polygonal cells of the adrenal medulla are derived from the neural ectoderm, in common with cells of origin of the peripheral part of the sympathetic nervous system. They are arranged irregularly in groups or anastomosing columns, between which are networks of blood capillaries. These capillaries become dilated in areas, forming relatively large blood sinuses. In the medulla is found an abundance of sympathetic nerve fibers. These facts are significant in view of the knowledge that the rate of blood flow through the adrenal glands is greater than that of any other organ in the body (with the possible exception of the thyroid) and that the internal secretion of the medulla (epinephrine) is regulated through the influence of the sympathetic nervous system.

Some writers support the view that there is more than a mere anatomic relationship between the cortex and medulla of the adrenal gland. It has been held that histophysiologic transitions exist between the cortical and medullary portions of the gland. Others believe that material, which is to become epinephrine, passes through initial stages of preparation in the cortex, the final process being completed in the medulla. The suggestion has been made that the cortical cells manufacture epinephrine from tryptophane. Certain authors have stressed the presence of epinephrine in the cortical layers of the adrenal. Apart from interpenetration of the cortical structure by medullary cells, however, there is no good evidence that the cortical cells elaborate or store epinephrine. Further, in the interrenal body of lower forms chromaffin material does not exist.

The suggestion may be made that a certain degree of functional interdependence between cortex and medulla evolves as we advance from lower to higher biologic forms and that this leads to a more intimate anatomic relationship. In the adrenal of birds, the cells of the interrenal gland substance are interspersed with the chromaffin cells. Whatever may be the significance of the various anatomic relations between the chromaffin and the interrenal gland cells in the different forms, it is not likely that the functional explanation rests on a capacity of the interrenal tissue to elaborate epinephrine for the medulla. It seems more probable that, if a functional interrelationship exists between the cortex and the medulla of the adrenal gland, the indispensable function of the cells of the cortex, or of the hormone elaborated by them, is in some manner aided by the less vitally essential product of the cells of the medulla. Indeed, this possibility is suggested by some unpublished observations that I made in the course of investigations on the adrenal cortex. It was found that the action of extracts made from the medulla, by the same process as those obtained from the cortex, sometimes were effective in resuscitating adrenalectomized animals from coma and that when employed together with cortical extract seemed to increase its potency. Whether such action, if genuine, is due to epinephrine or to some other product of the medulla is not known. These incidental observations require further investigation.

The presence of epinephrine in the cells of the adrenal medulla imparts to them a special affinity for chromic stains; hence the terms "chromaffin" and "chromophil" tissue as commonly applied to these cells. Chromic stains produce a brownish color with epinephrine. With ferric chloride, epinephrine yields a green color, which turns reddish on the addition of alkali. The ferric chloride reaction was employed by Vulpian as early as in 1856 to demonstrate that the substance elaborated in the cells of the adrenal medulla is found in the adrenal vein blood. A rose color is produced with epinephrine on addition of corrosive mercuric chloride and sodium acetate or by the action of iodine. These color reactions are too feeble to be useful for detecting epinephrine in high dilutions.

For dilutions up to about 1 : 3,000,000, the blue color produced by Folin's phosphotungstic acid reagent is a

From the Physiological Laboratory, the University of Chicago.

1. Sharpey-Schafer, Edward: The Endocrine Organs, New York, Longmans, Green & Co., 1924. Sollmann, Torald: Manual of Pharmacology, ed. 4, Philadelphia, W. B. Saunders Company, 1932.
2. Biedl, A.: Innere Sekretion, Berlin, 1913.
3. Rogoff, J. M.: The Suprarenal Bodies, in Special Cytology, E. V. Cowdry, editor, New York, Paul B. Hoeber, 1932.

reliable reaction for epinephrine. This reagent, however, yields the same color with uric acid and other substances, which limits its usefulness as a test for epinephrine in blood. Nevertheless, it is quite satisfactory for quantitative determinations of epinephrine in commercial solutions or in the adrenal glands. For assaying the concentration of epinephrine in blood the much more sensitive biologic reactions must be employed. The method employed by Stewart and Rogoff in their studies on the rate of epinephrine secretion from the adrenals will be briefly described later.

Epinephrine is a simple amine and in its chemical reactions it resembles the alkaloids. Its structure is related to tyrosine and it can be prepared synthetically from catechol. The synthetic, racemic salt when acted on by methyl alcohol is converted into *d*- and *l*- epinephrine. The natural epinephrine is *l*-methylaminoethanol-catechol, which is identical with the levorotatory synthetic product. This has about fifteen to twenty times the physiologic potency of the dextrorotatory product, and the racemic compound possesses about one-half the physiologic value of the natural base. Solutions of epinephrine are readily oxidized on exposure to air, yielding a pink color. This color reaction has been utilized in devising a method for quantitative determinations of epinephrine in solution.

Oliver and Schaefer were the first to observe that the adrenal medulla stores a product which is capable of remarkably elevating the blood pressure. Saline or watery extracts of the medulla, when introduced into the circulation, caused a marked rise in blood pressure, while similar extracts made from the cortex of the gland failed to produce this effect. Later, the active material from the medulla, epinephrine, was isolated in pure form and its identification led to its synthesis. The property of elevating the blood pressure has been utilized as a means of determining the quantity of epinephrine in the glands, in the adrenal vein blood and in commercial solutions.

To determine the rate of secretion of epinephrine, a method should permit estimation of the blood flow through the gland and the concentration of epinephrine in the blood. This fulfils the elementary essentials for measurement of a velocity; i. e., measurement of a time and a mass. The most satisfactory method for quantitative determination of the concentration of epinephrine in blood is that employed extensively by Stewart and Rogoff in studies on the rate of liberation of epinephrine from the adrenal glands. The procedure for determining epinephrine output is as follows: Veins entering the vena cava, excepting the adrenal veins, are ligated or clamped so that a pocket can be formed by occluding the cava beneath the diaphragm and below the entrance of the adrenal veins. Into the "cava pocket" only blood from the adrenal veins can enter. The blood can be released into the circulation (for auto-assay with the aid of denervated organs) by releasing the clamp at the diaphragm or it can be collected through a cannula inserted in the lower end of the pocket by releasing the lower clamp (the upper clamp remaining). Collection of blood through the cannula is timed, the quantity of blood measured and the rate of blood flow during the collection thus determined. The epinephrine concentration in the adrenal blood is then determined by its action on a segment of rabbit's intestine and, when necessary, this is confirmed on a segment of nonpregnant rabbit's uterus. The tone and contractions of the intestinal segment are inhibited by epinephrine, while the opposite effect is caused on the uterus. These effects, within limits, are proportional to the concentration of epinephrine. The concentration of epinephrine in the blood and the rate of blood flow through the adrenal glands having been determined, it is a simple matter to calculate the rate of epinephrine secretion. There are, of course, many important details that must be observed and the method has its limitations. When properly employed, however, it is remarkable how well repeated results agree and reliable information is obtained. Results obtained by this or by any other method in which anesthesia is employed should not be interpreted, without further consideration, as applying to the non-anesthetized animal or man. But different kinds of anesthetics or varying depths of narcosis do not appear significantly to alter the rate of epinephrine output.

By this method, the rate of epinephrine secretion from the adrenal glands, under ordinary experimental conditions, has been determined in a large series of cats and dogs and in a number of monkeys. Employing volatile (ether, chloroform) and nonvolatile (urethane, amytal, chlorbutanol) anesthetics for the surgical procedures in the method, Stewart and Rogoff determined the average epinephrine output, in these animals, as about 0.00025 mg. per minute per kilogram of body weight. This can be increased by stimulation or diminished by section of the nerve supply to the adrenals. The rate of epinephrine secretion can be influenced, in either direction, by the action of certain drugs (e. g., strychnine, nicotine, physostigmine, curare). The alleged increase of epinephrine output in traumatic and in anaphylactic shock has been found not to occur in anesthetized animals.

It seems strange that an important rôle in the body cannot be attributed to the epinephrine secretion. This hormone yields definite reactions, quantitative information on its rate of secretion under different conditions is available, and control of the secretion through nervous mechanisms has been well established. Yet, though it lends itself readily to experimental study, no specific function for epinephrine has been proved. Indeed, it has been well established that, if it has a function in the body, it is not indispensable for life and health, for it is possible to suppress the secretion of epinephrine (by excision of one adrenal and complete denervation of the opposite gland with or without destruction of its medulla) without apparent influence on the life and health of the animal.

The theory of an "emergency function" of the adrenals is based on the concept that epinephrine is not secreted under ordinary conditions and that outbursts of epinephrine enter the blood stream at times of special stress.[4] The experimental support for this theory is an attempt to prove a significant liberation of epinephrine from the adrenals under the influence of asphyxia or of stimulation of sensory nerves.[5] However, the quantitative studies, made by Stewart and Rogoff,[6] on the liberation of epinephrine indicate that the secretion is continuous, and they failed to demonstrate any significant alteration in the rate of output

4. Cannon, W. B., and de la Paz, D.: Emotional Stimulation of Adrenal Secretion, Am. J. Physiol., **28**: 64, 1911. Cannon, W. B.: Studies on the Conditions of Activity in Endocrine Organs: XXVII. Evidence that Medulliadrenal Secretion Is Not Continuous, Am. J. Physiol. **98**: 447 (Oct.) 1931.

5. Cannon, W. B., and Hoskins, R. G.: The Effects of Asphyxia, Hyperpnea and Sensory Stimulation on Adrenal Secretion, Am. J. Physiol. **29**: 274, 1911.

6. Stewart, G. N., and Rogoff, J. M.: The Influence of Asphyxia upon the Rate of Liberation of Epinephrine from the Adrenals, J. Pharmacol. & Exper. Therap. **10**: 49 (July) 1917; Effect of Stimulation of Sensory Nerves upon the Rate of Liberation of Epinephrine from the Adrenals, J. Exper. Med. **26**: 637 (Nov.) 1917.

under these conditions. Of course, their experiments were performed on anesthetized animals, as were those on which the "emergency" theory is based. The original studies, by Cannon and his collaborators, were made with a method which was later discarded in favor of the so-called denervated heart as an indicator for changes in the epinephrine output.[7] Repeating their experiments with this method, we found that the reactions obtained by them, on which the emergency theory rests, could be obtained with the "denervated heart" after epinephrine secretion was abolished or the adrenal glands excised.[8] Cannon at first maintained that acceleration of the denervated heart did not occur in the absence of epinephrine secretion, but later he also got positive results. He explained the acceleration in absence of the adrenals as the result of action of other substances; viz., products of the thyroid, liver, and so on. More recently he has reported the cardio-accelerator action of a substance, designated "sympathin."[9] It is maintained that these substances account for the acceleration of the denervated heart in the absence of epinephrine, but it is not clear why the reaction failed, in the absence of the adrenals, in Cannon's earlier experiments. Whatever may be the significance of these cardio-accelerating substances, it is evident that, if they account for acceleration of the denervated heart in the absence of the adrenal glands, the denervated heart, as employed, should not be relied on for "quantitative" measurements of changes in the epinephrine output from the adrenals.

Other theories of function of epinephrine have been submerged by the extensive literature on the emergency theory. It seems that some of the older theories offer better explanations for the function of this hormone. There is no good evidence that epinephrine plays a rôle in the maintenance of normal blood pressure. Suppression of epinephrine secretion causes no significant change in the blood pressure. It has been shown that epinephrine can exert an action on the heart when secreted at the ordinary rate. We have observed some reactions also that indicate the possibility of an effect as an adjuvant to the action of sympathetic nerves. Older observations supporting the view that the adrenal medulla plays an important part in carbohydrate metabolism were based largely on the effects of pharmacologic quantities of epinephrine, which are much larger than the adrenals have been found capable of secreting. Zuelzer's theory of an antagonism between epinephrine secretion of the adrenal medulla and the internal secretion of the pancreas lacks substantial experimental support. Stewart and Rogoff[10] found that experimental pancreatic diabetes can be readily produced in the absence of epinephrine secretion from the adrenals. Hyperglycemia and glycosuria were as quickly developed and reached as high a level as in depancreatized animals without interference with the adrenals, if the animals made a satisfactory recovery from the surgical procedures. More recent studies by various investigators have failed, thus far, to establish a definite relationship between the adrenal medulla and pancreatic diabetes. Existing experimental evidence of an influence of calcium salts on epinephrine action is interesting in the light of the hypercalcemia that occurs in adrenalectomized animals. The probable interrelationship between the parathyroid and adrenal glands, recently reported,[11] may be concerned with the adrenal medulla, although the evidence at present relates it to the cortex.

The concept that epinephrine aids in maintaining normal blood pressure originated from the observation that low blood pressure is one of the characteristic symptoms of severe adrenal disease (Addison's disease). It also follows from the fact that extracts of the medulla, when introduced into the circulation, cause a marked rise in pressure. The idea has been maintained that epinephrine plays an important rôle in conditions associated with hypertension. Recent unpublished experiments that are still in progress, in which actual measurements of epinephrine concentration in the general blood of patients with hypertension were attempted, failed to demonstrate detectable quantities. In hypertension experimentally created by renal ischemia, it was found by Goldblatt and his co-workers[12] that epinephrine secretion was not a factor. Hyperthyroidism and a number of other conditions are often believed to be due to or associated with an excess of epinephrine secretion from the adrenals. On this assumption surgeons have recommended excision of an adrenal gland or denervation of one or both glands. Nothwithstanding the benefit supposed to be derived, the practice of these operations should be deprecated. The experiences of those who have performed many experiments with the adrenals, involving surgical procedures, show that these operations involve great risk to life. It seems, therefore, that the meager basis for assuming hypersecretion of epinephrine in certain diseases does not warrant the risk of such operations on human beings as a therapeutic measure. Even if the existence of hyperepinephremia were proved, denervation as practiced could not be expected to afford permanent relief, since it is well known that nerve regeneration can occur within a few weeks. Nor can it be hoped that excision of one adrenal would prove beneficial, since compensatory hypertrophy or functional compensation of a remaining organ may be expected when its mate is excised. This, of course, does not apply in cases of unilateral tumor of the adrenal medulla, e. g., paraganglioma.

Unlike well known products of other endocrine glands, the therapeutic value of epinephrine does not depend on capacity to substitute for lack of physiologic endocrine function of the gland from which it is derived. For, as already mentioned, the function of the adrenal medulla is still quite obscure and its secretion of epinephrine is not indispensable for life and health. The value of epinephrine as a therapeutic agent depends primarily on its pharmacologic actions on the circulatory apparatus. A brief summary of the therapeutic uses of epinephrine in surgery and in internal medicine has been published by Richardson[13] and by Christian.[14]

7. Cannon, W. B.: Studies on the Conditions of Activity in Endocrine Glands: V. The Isolated Heart as an Indicator of Adrenal Secretion Induced by Pain, Asphyxia and Excitement, Am. J. Physiol. **50:** 399 (Dec.) 1919.

8. Stewart, G. N., and Rogoff, J. M.: The Relation of the Epinephrine Output of the Adrenals to Changes in the Rate of the Denervated Heart, Am. J. Physiol. **52:** 304 (June) 1920; Essentials in Measuring Epinephrine Output with Further Observations on Its Relation to the Rate of the Denervated Heart, ibid. **52:** 521 (July) 1920.

9. Cannon, W. B., and Bacq, Z. M.: Studies on the Conditions of Activity in Endocrine Organs: XXVI. A Hormone Produced by Sympathetic Action on Smooth Muscle, Am. J. Physiol. **96:** 392 (Feb.) 1931.

10. Stewart, G. N., and Rogoff, J. M.: The Adrenals and Pancreatic Diabetes, Am. J. Physiol. **65:** 319 (July) 1923.

11. Rogoff, J. M.: Observations on Functional Interrelationship Between the Adrenal and Parathyroid Glands, Science **80:** 319 (Oct. 5) 1934.

12. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. J. Exper. Med. **59:** 347 (March) 1934.

13. Richardson, E. P.: Glandular Therapy: The Surgical Application of Epinephrine, J. A. M. A. **83:** 1587 (Nov. 15) 1924.

14. Christian, H. A. Glandular Therapy: Epinephrine and Suprarenal Gland in Internal Medicine, J. A. M. A. **83:** 1588 (Nov. 15) 1924.

Epinephrine is most effective in its action on the circulation when administered intravenously. Oral administration cannot be said to yield physiologic effects and it may result in distressing gastric irritation. Intramuscular injection permits better absorption of the drug than subcutaneous administration, especially when followed by local massage. Subcutaneous introduction of epinephrine results in local vasoconstriction, which retards its absorption. But it has been found by Luckhardt and Koppanyi [15] that massage of the area of an epinephrine injection gives a hemodynamic effect some hours after the injection, if deep anesthesia is avoided. Barbour and Rapoport [16] found that epinephrine is more readily absorbed from the rectum than from the colon. Rectal absorption yielded a greater rise in blood pressure, though glycosuria was more readily obtained when the drug was absorbed from the colon. Glycosuria is also more readily obtained by subcutaneous than by intravenous administration, while the reverse is true of the blood pressure effect. Supposed differences in susceptibility to epinephrine may be explained by differences in rate of absorption of the drug when administered by subcutaneous or intramuscular injections. Local application of epinephrine, as a styptic, depends on its capacity to constrict arterioles and capillaries. Vasoconstriction may be followed by dilatation and in local application to the nasal mucous membrane; e. g., in hay fever, temporary benefit may be followed by aggravation of symptoms. This may apply to other conditions in which epinephrine is employed locally.

The predominant action of epinephrine is produced on tissues that are supplied with nerves from the sympathetic system. Its effect on an organ is the same as that which is obtained on stimulation of the sympathetic innervation of the organ. This action has been termed "sympathomimetic" by Barger and Dale. When the sympathetic nerve supply to an organ is sectioned and the nerve endings are allowed to degenerate, the organ becomes more sensitive to the action of epinephrine. This indicates that the effect of the drug is exerted on the myoneural junction and not on the nerves or their endings. Langley has suggested that a "receptive substance" in the cell protoplasm, which is affected by epinephrine, becomes more sensitive when the cell is deprived of the influence of its nerve supply. The increased sensitivity of denervated organs to epinephrine renders them useful as indicators for epinephrine, when employed under proper conditions. The usual effect of epinephrine on smooth muscle is abolished or reversed by the action of ergotoxine or apocodeine. Thus, a dose of epinephrine that causes vasoconstriction and an elevation of blood pressure will fail to elevate the pressure or may cause a fall following the action of these drugs. In some animals a fall is produced by very small doses of epinephrine, while larger doses cause a rise. Dragstedt,[17] however, found that, in the unanesthetized animal, doses comparable with and administered at the ordinary rate of epinephrine secretion are capable of causing a rise in blood pressure.

The vasomotor action of epinephrine renders it exceedingly valuable in combating acute circulatory collapse, especially in traumatic snock or accidents of anesthesia. Its effect, however, is of short duration and its use should be supplemented by measures that give more lasting benefit. Epinephrine is easily oxidized and when introduced into the circulation it is so rapidly destroyed that an effective concentration in the blood is maintained for only a brief period; hence its evanescent effect on the circulation. As an emergency measure, therefore, it is usually necessary to administer the drug in more than one dose, until improved blood flow through the circulatory mechanism leads to recovery or until other effective treatment has been substituted. For such treatment, 2 or 3 minims (0.1 or 0.2 cc.) of 1:1,000 solution of epinephrine hydrochloride, well diluted with physiologic solution of sodium chloride, usually suffices for intravenous administration. It should be borne in mind that, while epinephrine elevates the blood pressure, its vasoconstrictor action retards capillary circulation. Thus, the blood flow through important structures may be diminished at a time when increased circulation is desired. It is generally advantageous, therefore, to increase the volume of circulating fluids by intravenous injection of saline solution. The addition of epinephrine at intervals, in such amounts as to permit a sustained rise in blood pressure, combines the immediate brief effect of the drug with the more lasting value of the added physiologic fluid until the augmented circulation through the cardiac centers facilitates recovery.

Administration of larger quantities of epinephrine than the dose required to elevate the blood pressure effectively may lead to dangerous consequences. The heart, in shock, may not be able to withstand a sudden, high elevation of pressure resulting from powerful vasoconstriction, and acute dilatation may be fatal. Stimulation of the vagus center, as a result of sudden increase in blood pressure, may lead to serious cardiac inhibition. "Delirium cordis" may result from excessive action of epinephrine on the heart. Other possible, untoward effects may occur. There is some question whether ventricular fibrillation is more readily caused by larger doses of epinephrine than by small ones. The weight of opinion, however, is that larger doses cause this toxic effect, although it is conceivable that under certain conditions or in susceptible individuals the smaller dose may do this. Thus the desired therapeutic effect may easily be defeated by indiscreet use of the drug. Especially is this the case when epinephrine is injected directly into the heart as an extreme measure in cardiac standstill. An excellent editorial [18] on intracardiac injection of epinephrine was published in THE JOURNAL in 1923. With appropriate dosage, this procedure has proved valuable in causing the heart to resume beating if arrest of heart action has not existed more than ten minutes. Stewart, Guthrie and Pike have shown that the medullary centers cannot be resuscitated if cerebral anemia has been induced for more than about fifteen minutes.

Since epinephrine secreted at the ordinary rate can exert an influence on the heart, to produce a physiologic effect it should be necessary only to raise the concentration of epinephrine in the blood to an effective level above the ordinary concentration. Calculating from the rate of output of epinephrine from the adrenal glands, even if none were destroyed in the pulmonary circulation, the average epinephrine concentration in the general circulation would be approximately from

15. Luckhardt, A. B., and Koppanyi, T.: Conditions Under Which Subcutaneously Injected Epinephrine Gives a Hemodynamic Effect, Proc. Soc. Exper. Biol. & Med. **23**: 774 (May) 1926.

16. Barbour, H. G., and Rapoport, F. H.: A Comparison of Rectal with Colon Injections of Epinephrine, with Reference to Pressor Effects and to Glycosuria, J. A. M. A. **76**: 492 (Feb. 19) 1921.

17. Dragstedt, C. A.: Observations on the Hemodynamic Action of Epinephrine, J. A. M. A. **91**: 1035 (Oct. 6) 1928.

18. The Intracardiac Injection of Epinephrine, editorial, J. A. M. A. **80**: 1314 (May 5) 1923.

1:2,000,000,000 to 1:1,000,000,000. If this concentration can exert an influence on the heart, it is conceivable that the introduction of epinephrine in larger doses, capable of raising the concentration to from 1:5,000,000 to 1:1,000,000 or more, could be decidedly injurious if not extremely dangerous.

I am cognizant of reports in the literature indicating that such large doses of epinephrine have sometimes been administered without serious consequences. I have often observed this in experimental (anesthetized) animals. However, it may be supposed that clinical reports on fatal consequences of overdosage may less likely find their way into the literature. Clinicians are familiar with the alarming symptoms often observed following subcutaneous administration of from 5 to 10 minims of 1:1,000 epinephrine as a diagnostic test and we have frequently seen undesirable results of excessive dosage in experimental animals as well as in clinical cases. Prominent among the toxic symptoms are sweating, muscle tremors, cardiac palpitation or distress and sometimes collapse. It is much safer to rely on epinephrine to produce a response in a small dose, the dose being repeated or increased if necessary, until the desired reaction is obtained.

It may appear that undue stress has been placed on the matter of dosage, but it is my conviction that it is not out of proportion to the importance of the subject, since the use of epinephrine has become widespread as a remedy in many branches of the practice of medicine. Its use in asthma and other conditions that are related to allergy has been found of great value. Here also experienced allergists have observed that effective doses are much smaller than is sometimes supposed to be necessary to obtain the desired effects. In serum sickness, angioneurotic edema and urticaria, epinephrine has proved very useful. The continued use of epinephrine in asthma has sometimes led to indications of habit formation, but the cases reported are not convincing on this point. Supposed addiction, especially following self medication, can probably be better explained as a psychic condition.

In hypotension, especially in Addison's disease, administration of epinephrine has not proved beneficial. The so-called Muirhead treatment has not proved very effective in any case in which the diagnosis of Addison's disease could not be questioned. Indeed, distressing effects from epinephrine, in patients with this disease, is a common observation. As the indispensable function of the adrenal is performed by the cortex and not the medulla, it is not surprising that epinephrine is ineffective as a remedy in a disease that is now recognized as due primarily to cortical insufficiency. On the other hand, while the cortical hormone is not available in pure form, beneficial effects have been obtained in Addison's disease by oral administration of an extract representing the hormone (interrenalin), made from the adrenal cortex and preserved in glycerin.[19] Parenteral administration of cortical extracts thus far has not proved as valuable in this condition as was at first supposed. It is possible that the presence of undesirable substances in some such extracts (e. g., histamine, choline, protein) may defeat the beneficial action of cortical hormone present in the extracts. A pertinent discussion concerning the cortical hormone is given in a recent paper.[20]

It is not possible to review all the therapeutic uses to which epinephrine has been subjected. Its value in ophthalmology and in dental surgery is too well known to require comment. In this connection may be mentioned the synergistic action of epinephrine when combined with certain other drugs used as local anesthetics. Such drugs become more effective either through an influence of epinephrine or because of its local vasoconstrictor effect permitting slower absorption and more prolonged action. Mere mention of some of the therapeutic applications of epinephrine will suffice to illustrate its widespread use as a drug. It has been employed for relief of internal hemorrhage, but a criticism of this procedure has been suggested in that the sudden elevation of systemic blood pressure, following administration of epinephrine especially in larger doses, may result in aggravation instead of suppression of such hemorrhages. In Stokes-Adams syndrome, subcutaneous injection of from 0.3 to 0.6 cc. of 1:1,000 solution has been recommended as a safe and effective dose, but intravenous administration may lead to grave reactions.[21] The therapeutic use of epinephrine in angina pectoris has been discouraged by Cottrell and Wood,[22] who reported serious consequences following subcutaneous injection of 1 cc. of 1:1,000 solution as a diagnostic test in a case. The action of epinephrine on the coronary arteries has not been satisfactorily determined. There is evidence that it constricts these vessels in man and monkey but dilates those of other animals.

A German writer has claimed curative effects from the use of epinephrine in chorea minor, while an American reported negative results. It has been used, subcutaneously, to relieve the pain of herpes zoster. Improvement or cure of rickets, in children from 1 to 3 years old, by oral administration of epinephrine for from four to six weeks has been claimed, but it should be pointed out that calcium was administered three times daily during this period. The use of epinephrine by mouth has been recommended in vertigo on the assumption that it excites the sympathetic nerve endings, regulates the blood pressure and is further "antitoxic." In ocular hypertension, favorable results have been obtained by local application of epinephrine. Subcutaneous injection of the drug has been employed for relief and cure of eczema. Local injections into hemorrhoids have been stated to be curative. Injection of epinephrine fifteen minutes before splenectomy, if the spleen is not sclerotic, is said to reduce chances of excessive hemorrhage because the spleen is rendered bloodless by contraction. This effect on the spleen has been utilized as a diagnostic procedure, to distinguish between an enlarged spleen and other tumors. Osteomalacia, rodent ulcer, gastric ulcer, psychoses, psychoneuroses, various so-called endocrinopathies and even sea-sickness are among the many conditions for which epinephrine has been recommended. In the light of the existing contradictions in the literature, it will not be possible in this article to discuss its use and abuse in so great a variety of diseases. At any rate, its alleged benefit in all these conditions is sufficient support for the suggestion that the use of epinephrine in medicine does not represent endocrine therapy in the sense of substituting for lack of function of the adrenal medulla.[23]

19. Rogoff, J. M.: Addison's Disease: Further Report on Treatment with "Interrenalin" (Adrenal Cortical Extract), J. A. M. A. **99**: 1309 (Oct. 15) 1932.

20. Rogoff, J. M.: On the Adrenal Cortical Hormone: Experiments with a Commercial Adrenal Extract (Eschatin), J. A. M. A. **103**: 1764 (Dec. 8) 1934.

21. Feil, Harold: Epinephrine in the Stokes-Adams Syndrome, J. A. M. A. **80**: 26 (Jan. 6) 1923.

22. Cottrell, J. E., and Wood, F. C.: Effect of Epinephrine in Angina Pectoris, Am. J. M. Sc. **181**: 36 (Jan.) 1931.

23. A list of at least forty-eight supplementary references has been omitted from THE JOURNAL, but will appear with this article when the series is published in book form.—ED.

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1934

TWENTY-THIRD ANNUAL REPORT

This report deals with the same ninety-three cities that have been discussed in the corresponding articles for the years beginning with 1930. The number of deaths from typhoid during 1934 in each city (except Scranton and Chattanooga, as explained in notes to tables 2 and 5) has been supplied by the respective health department. As the United States Bureau of the Census is convinced that the use of 1933 population estimates in calculating 1934 rates will at least prevent further distortions such as would occur if additional increments were added to population figures that are already too large, the rates in the present article are based on estimates of the population of the cities as of July 1, 1933, made by the Bureau of the Census. This is similar to our procedure of last year, when the 1932 midyear population figures were used to calculate the rates for 1933. It should be pointed out, however, that the 1933 population estimates used here are smaller

TABLE 1.—*Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Bridgeport	0.0	0.7	0.0	0.7	0.5	2.2	4.8	5.0	10.3
Fall River	0.0*	0.0	0.0	0.0	2.2	2.3	8.5	13.4	13.5
Lowell	0.0*	1.0	2.0	1.0	2.6	2.4	5.2	10.2	13.9
Lynn	0.0	0.0	0.0	0.0	1.5	1.6	3.9	7.2	14.1
New Haven	0.0	1.2	1.2	1.2	0.6	4.4	6.8	18.2	30.8
Somerville	0.0	1.9	0.0	0.0	1.3	1.6	2.8	7.9	12.1
Springfield	0.0	0.6	1.9	2.6	0.4	2.0	4.4	17.6	19.9
Waterbury	0.0	0.0	0.0	0.0	1.2	1.0	8.0	18.8	....
Worcester	0.0	0.5	1.5	0.5	1.0	2.3	3.5	5.0	11.8
Hartford	0.6	0.6	0.6	3.6	1.3	2.5	6.0	15.0	19.0
Boston	0.9	0.2	0.5	0.9	1.2	2.2	2.5	9.0	16.0
Cambridge	0.9	1.8	1.7	0.0	2.1	4.3	2.5	4.0	9.8
Providence	1.2	1.2	0.8	1.6	1.3	1.8	3.8	8.7	21.5
New Bedford	1.8*	1.8	0.0	1.8	1.5	1.7	6.0	15.0	16.1

* Rate computed from population as of April 1, 1930, as no estimate for July 1, 1933, was made by the Census Bureau.

(with only seven exceptions) than the 1932 estimates formerly furnished us by the Bureau of the Census (see, for example, table 11). This is due to the fact that the bureau has changed its method of estimating city populations. Whereas formerly the method of arithmetical progression was used for each city, the present method is based on the estimated increase in the United States as a whole (figured from birth, death, immigration and emigration figures), distributed to the states according to the percentage that each state's increase between 1920 and 1930 was of the national increase, and the state increase distributed to the counties, and the county increase to the cities.

The problem of including in the rates for each city the typhoid deaths of nonresidents is as conspicuous as it has been for some years. In thirty-one of the ninety-three cities we are informed that one third or more of the typhoid deaths were in nonresidents; in ten of these thirty-one cities all the typhoid deaths were in nonresidents. These are indicated in table 9, which should be referred to also in studying tables 1-8.[1] Particulars as to the data that are unavailable for certain cities (noted in tables 2-8 as "incomplete data") are given in the report covering the year 1932 and in the footnotes to these tables in all earlier articles.

Nine of the fourteen large New England cities had no typhoid deaths in 1934 (table 1), and a tenth (Hartford) states that the only typhoid death occurring in 1934 was in a nonresident (table 9). Three cities (Fall River, Lynn and Waterbury) have had no typhoid

TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Elizabeth	0.0	0.0	0.0	4.3	1.6	2.4	3.3	8.0	16.6
Jersey City	0.0	0.3	0.6	0.3	0.9	2.7	4.5	7.2	12.6
Reading	0.0	0.0	0.9	0.0	1.6	6.0	10.0	31.9	42.0
Rochester	0.0	0.3	0.3	0.9	1.7	2.1	2.9	9.6	12.8
Scranton	0.0†	3.4	1.4	2.1	1.8	2.4	3.8	9.3	31.5
Utica	0.0	0.0	1.9	0.0	1.1	3.9*	...	...	....
Yonkers	0.0	0.0	0.7	1.4	0.5	1.7	4.8	5.0	10.3
Newark	0.2	0.4	0.9	0.2	0.9	2.3	3.3	6.8	14.6
Buffalo	0.3	0.3	1.2	0.7	2.7	3.9	8.1	15.4	22.8
Syracuse	0.5	1.8	0.5	0.5	0.8	2.3	7.7	12.3	15.6
New York	0.6	0.9	0.8	1.1	1.3	2.6	3.2	8.0	13.5
Paterson	0.7	0.0	0.7	2.9	1.0	3.3	4.1	9.1	19.3
Albany	0.8	0.8	0.8	2.3	1.8	5.6	8.0	18.6	17.4
Trenton	0.8	2.4	0.8	1.6	2.1	8.2	8.6	22.3	28.1
Philadelphia	0.9	0.6	1.3	0.9	1.1	2.2	4.9	11.2	41.7
Pittsburgh	1.5	0.1	1.3	1.2	2.4	3.9	7.7	15.9	65.0
Camden	1.7	3.3	2.5	4.2	4.4	5.9	4.9	4.5	4.9
Erie	1.7	0.9	1.7	0.8	0.9	2.3	6.9	49.0	46.6

* Incomplete data.
† Typhoid death rates for Scranton furnished by Pennsylvania Department of Health, Harrisburg.

deaths for four consecutive years—a remarkable record, unequaled heretofore by any of the large cities in this country. Only two cities in the group had 1934 rates of 1.0 or over, as against six in 1933, five in 1932 and six in 1931. In the past four years all but three cities (Boston, Hartford and Providence) have had at least one year with no typhoid deaths. Boston has a higher rate (0.9) in 1934 than its noteworthy low mark for 1933 (0.2). The New England cities as a whole have in 1934 the lowest group rate in the country (table

TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Tampa	0.0	1.8	2.8	3.8	3.8	19.1	43.9*	....	....
Baltimore	1.3	0.4	0.6	3.1	3.2	4.0	11.8	23.7	35.1
Jacksonville	1.4	1.4	2.8	3.0	4.4	...	....	....	....
Washington	1.6	3.6	1.4	3.9	2.8	5.4	9.5	17.2	36.7
Miami	1.8	2.7	1.8	1.8	3.5	...	....	....	....
Wilmington	1.9†	1.9	0.9	1.9	3.1	4.7	25.8*	23.2*	33.0
Richmond	3.8	1.6	2.7	1.6	1.9	5.7	9.7	15.7	34.0
Atlanta	3.9	6.0	8.8	12.6	11.1	14.5	14.2	31.4	58.4
Norfolk	5.4*	3.8	0.8	5.4	2.2	2.8	8.8	21.7	42.1

* Incomplete data.
† Rate computed from population as of April 1, 1930, as no estimate for July 1, 1933, was made by the Census Bureau.

12); this rate (0.53) is a shade better than any previous group rate, the next best being that of the East North Central cities in 1933 (0.55). This is the sixth year of progressive decline in the group rate for the New England cities and the third successive year when the rate has been below 1.0.

The Middle Atlantic cities (table 2) likewise for the past three years have had group rates under 1.0, with a progressive decline (table 12). Seven of the eighteen

The preceding articles in this series were published in THE JOURNAL, May 31, 1913, p. 1702; May 9, 1914, p. 1473; April 17, 1915, p. 1322; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 777; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 860; March 25, 1922, p. 890; March 10, 1923, p. 691; Feb. 2, 1924, p. 389; March 14, 1925, p. 813; March 27, 1926, p. 948; April 9, 1927, p. 1148; May 19, 1928, p. 1624; May 18, 1929, p. 1674; May 17, 1930, p. 1574; May 9, 1931, p. 1576; April 30, 1932, p. 1550; May 13, 1933, p. 1491, and May 19, 1934, p. 1677.

1. The problem of the nonresident has been discussed at some length in our previous reports; for example, J. A. M. A. **100**: 1491 (May 13) 1933 and **98**: 1550 (April 30) 1932.

cities report the complete absence of typhoid deaths during 1934, Elizabeth for the third successive year, Reading, Utica and Yonkers for the second. Elizabeth's record is particularly striking after its high rates in 1930 and 1931 (4.4 and 4.3). Scranton, which had the highest rate of the group in 1933, had no typhoid death in 1934, its only previous clear record having been in 1925. The clear records for Jersey City and Rochester are the first in the histories of these cities. Pittsburgh's 1934 rate (1.5) is ten times higher than its conspicuously low rate for 1933; four of the ten deaths in 1934, however, were stated to be in nonresidents. The present rate is still well below the city's average

TABLE 4.—*Death Rates of Eighteen Cities in East North Central States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Grand Rapids	0.0	0.0	0.0	1.2	1.0	1.9	9.1	25.5	29.7
Peoria	0.0	0.9	1.8	1.8	0.2	3.7	5.7	16.4	15.7*
Milwaukee	0.2	0.3	0.0	0.3	0.8	1.6	6.5	13.6	27.0
Akron	0.4	1.1	0.4	1.5	1.5	2.4	10.6	21.0	27.7*
Chicago	0.6	0.3	0.4	0.4	0.6	1.4	2.4	8.2	15.8
Youngstown	0.6	2.3	1.1	1.7	1.1	7.2	19.2	29.5	35.1
Cleveland	0.8	0.5	0.2	3.4	1.0	2.0	4.0	10.0	15.7
Canton	0.9	0.0	0.9	1.9	1.4	3.3	8.9	....	....
Dayton	1.0	0.5	1.0	0.4	1.9	3.3	9.3	14.8	22.5
Detroit	1.1	0.6	0.5	0.7	1.3	4.1	8.1	15.4	22.8
Indianapolis	1.1	0.5	1.6	1.6	2.7	4.6	10.3	20.5	30.4
Flint	1.2	0.0	1.8	0.0	1.6	4.6	22.7	18.8	46.9
Toledo	1.3	1.3	0.7	2.0	3.0	5.8	10.6	31.4	37.5
Cincinnati	1.5	0.9	3.0	0.4	2.5	3.2	3.4	7.8	30.1
South Bend	1.8	1.0	0.0	0.0	...	...	...	...	....
Evansville	1.9	0.0	1.9	0.9	6.2	5.0	17.5	32.0	35.0
Columbus	2.0	1.7	1.7	2.4	2.1	3.5	7.1	15.8	40.0
Fort Wayne	6.7	0.0	2.5	1.7	4.2	12.9	7.3	....	....

* Incomplete data.

for 1926-1930. The three cities besides Pittsburgh with a population of over half a million all had rates under 1.0, New York for the third successive year, Philadelphia and Buffalo for the second. Camden has its lowest rate since 1927.

One of the South Atlantic cities (Tampa) reports no typhoid death in 1934 (table 3). Atlanta continues to show remarkable improvement, its 1934 rate (3.9) being about one third of its rate for 1931 and its average for 1926-1930. For the first time since 1919, Atlanta relinquishes the lowest place in its group and,

TABLE 5.—*Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Knoxville	0.9	7.1	8.0	7.3	10.7	20.8	25.3*	....	....
Louisville	2.5	1.9	2.9	2.6	3.7	4.9	9.7	19.7	52.7
Nashville	2.6	7.6	7.6	3.2	18.2	17.8	20.7	40.2	61.2
Birmingham	5.8	4.0	2.5	3.0	8.0	10.8	31.5	41.3	41.7
Chattanooga	8.1†	3.2	8.0	1.6	8.0	18.6	27.2	35.8*	....
Memphis	8.4	7.6	11.4	7.3	9.3	18.9	27.7	42.5	35.3

* Incomplete data.
† Typhoid deaths for Chattanooga furnished by the Tennessee Department of Health, Nashville.

having a rate under 5.0, moves to the second rank among the cities of the country (table 9). Norfolk, which brings up the foot of the list in 1934, used to stand quite consistently at the head but has had relatively high rates for four of the past five years. Baltimore had almost four times as many typhoid deaths in 1934 as in 1933.[2] The group rate for the South Atlantic cities (2.11) is slightly lower than for the two preceding years and is less than half of the corresponding rate for 1931 and for 1926-1930; it is better than the best group rate in the country in 1925.

A decided increase in typhoid mortality occurred in the cities of the East North Central group (table 4), with eighty-eight typhoid deaths as against fifty-four in 1933. For the first time in the past five years the

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
St. Paul	0.0	1.4	0.7	1.1	1.4	3.4	3.1	9.2	12.8
Wichita	0.0	1.7	1.7	0.0	1.2	6.3	...	...	....
Omaha	0.9	0.5	1.4	1.8	1.3	3.3	5.7	14.9	40.7
Duluth	1.0	1.0	1.0	1.0	1.1	1.7	4.4	19.8	45.5
Minneapolis	1.2	0.2	0.8	0.6	0.8	1.9	5.0	10.6	32.1
Kansas City, Mo.	1.4	2.4	1.4	1.5	2.8	5.7	10.6	16.2	35.6
Kansas City, Kan.	1.6	0.8	0.0	1.6	1.7	5.0	9.4	31.1	74.5*
St. Louis	1.7	2.2	1.2	2.0	2.1	3.9	6.5	12.1	14.7
Des Moines	6.2	2.0	0.0	0.0	2.4	2.2	6.4	15.9	23.7

* Incomplete data.

progressive decline of the group rate has been interrupted, and, instead of having as usual the best group rate in the country, the East North Central cities in 1934 have fourth place. Even so, their rate is still under 1.0. Only two cities had clear typhoid records in 1934, as against five in 1933; and whereas thirteen of the eighteen cities had rates under 1.0 in 1933, there were only eight with such low rates in 1934. Twelve cities had higher typhoid rates in 1934 than in 1933—slight increases, to be sure, except in the case of Fort Wayne, which, after a clear record in 1933, has a rate of 6.7 for 1934. This is the highest rate in the group since

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Tulsa	2.7	0.0	0.0	2.0	8.3	16.2*	....	....	....
Houston	2.8	4.0	3.7	3.2	4.8	7.6	14.2	38.1	49.5*
El Paso	3.8	2.8	5.6	4.8	9.1	10.8	30.7	42.8	....
Dallas	4.3	5.3	7.4	7.3	7.3	11.2	17.2	....	....
San Antonio	4.9	4.9	3.6	4.2	4.6	9.3	23.3	29.5	35.9
Fort Worth	5.9	7.6	2.9	5.4	5.9	6.1	16.3*	11.9	27.8
Oklahoma City	5.9	3.4	3.9	5.6	7.4*	...	....	....	....
New Orleans	8.9	9.1	8.6	13.9	9.9	11.6	17.5	20.9	35.6

* Incomplete data.

1930 and the highest for Fort Wayne since 1925. Six of the twelve cities with increases in 1934 state that one third or more of the typhoid deaths were in nonresidents. Detroit in 1934 had eighteen typhoid deaths, nine of them being in nonresidents, six of whom were performers in a traveling circus and had probably contracted the infection in some community which they had visited before coming to Detroit.[3] The Chicago increase from 0.3 in 1933 to 0.6 in 1934 is doubtless influenced by the great fire in the Union Stock Yards on May 19, 1934, when people drank water from contaminated sources.[4]

The six East South Central cities (table 5) had exactly the same number of typhoid deaths (sixty-one) in 1934 as in 1933. Only two cities (Knoxville and Nashville) showed decreases in 1934, but these were notably encouraging, Knoxville's rate being the lowest

2. An outbreak of typhoid with twenty-eight cases following a benefit supper was reported in THE JOURNAL, Sept. 1, 1934, p. 686.

3. Freund, H. A.: Acute Outbreak of Typhoid, J. A. M. A. **103**: 622 (Aug. 25) 1934.

4. Typhoid Outbreak Among Firemen, J. A. M. A. **103**: 116 (July 14) 1934.

in the city's records (which began in 1920) and Nashville's the lowest in its history. Of the increases in the other four cities, that of Chattanooga is conspicuous, being more than double its 1933 rate and about the same as its 1926-1930 average. For the past four years Memphis seems to have assumed the place at the foot of the list formerly occupied by Nashville.

Similarly, in the West North Central cities (table 6) in 1934 there was practically the same typhoid mortality as in 1933 (forty as against forty-one deaths); thirteen of the deaths, however, were reported as in nonresidents. Two of the nine cities (St. Paul and Wichita) report no typhoid deaths in 1934, and in two other cities (Omaha and Duluth) all the reported typhoid deaths were stated to be in nonresidents. It is the first clear typhoid year ever recorded for St. Paul, but Wichita has had a similar record three times before (1926, 1929, 1931). The only striking change among the cities of this group is the sudden explosion in Des Moines to a 1934 rate of 6.2, its highest rate since 1919.

Like the two preceding groups, the West South Central cities (table 7) had practically the same mortality in 1934 as in 1933 (105 typhoid deaths in 1934 and 106 in 1933). Tulsa continues to have the lowest rate in the group, as it has had for every year beginning with 1930; but, instead of a clear record such as it had in 1932 and 1933, Tulsa in 1934 has a rate of 2.7. New Orleans continues to have the highest rate in the group, as it has had since 1931; its rate was also the highest in the country in 1931, 1933 and 1934 (table 9). The rate for this group of cities as a whole has been the highest in the country for the past three years.

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population*

	1934	1933	1932	1931	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Seattle	0.0	0.8	1.1	0.5	2.2	2.6	2.9	5.7	25.2
Tacoma	0.0	0.9	1.8	0.9	1.8	3.7	2.9	10.4	19.0
San Francisco	0.1	0.1	1.5	1.4	2.0	2.8	4.6	13.6	26.3
Long Beach	0.6	0.6	0.0	0.0	1.1	2.1*	...	....	....
Portland	0.6	0.0	0.6	1.0	2.3	3.5	4.5	10.8	23.2
Oakland	0.7	0.7	1.0	1.0	1.2	2.0	3.8	8.7	21.5
Los Angeles	1.0	0.6	0.6	0.7	1.5	3.0	3.6	10.7	19.0
San Diego	1.2	4.3	0.6	0.6	1.0	1.6	7.9	17.0	10.8
Denver	1.4	2.7	0.7	3.4	2.6	5.1	5.8	12.0	37.5
Salt Lake City	1.4	0.0	0.7	1.4	1.9	6.0	9.3	13.2	41.1
Spokane	2.6	0.9	1.7	0.8	2.2	4.4	4.9	17.1	50.3

* Incomplete data.

The cities in the Mountain and Pacific states (table 8) average slightly less for 1934 than for 1933. There are in 1934, as in 1933, two cities without typhoid deaths. Seattle has never had such a record before and Tacoma only once (1928). San Diego's rate, which rose suddenly in 1933, is about two-thirds lower in 1934, though still higher than the 1926-1930 average for that city. Denver, while still near the foot of the table, has almost halved its 1933 rate. Spokane, on the other hand, has its highest rate since 1926. San Francisco repeats its 1933 rate of 0.1—a remarkably low rate for a city of more than 500,000 population, equaled only once before by any of the twelve other cities of its size in the country (Pittsburgh in 1933). The nearest approaches in 1934 are Milwaukee (0.2) and Buffalo (0.3).

Of the thirteen cities in the country with more than 500,000 population, eight had 1934 typhoid rates below 1.0, and all thirteen had rates below 2.0, thus appearing in the first rank of table 9. All thirteen appeared together in the first rank for the first time in 1932 and again, with the exception of St. Louis, in 1933. Ten years ago, in 1924, however, only three of these very large cities had rates under 2.0.

In 1934 for the second successive year none of the ninety-three cities registered a typhoid mortality rate greater than 10 per hundred thousand (tables 9 and 10). Twenty-three cities had no typhoid deaths at all in 1934, the largest number yet reported with a perfect score. Nine of these were New England cities and seven Middle Atlantic. Eight of the twenty-three cities had had no typhoid deaths in 1933, five of these having had a clear record also in 1932 and three of them (all in New England) having had no typhoid death in the past four years. Eighteen of the twenty-three cities had had clear records at least once before; for two (Peoria and Yonkers) 1934 was the seventh year in their history without a typhoid death, while in Waterbury it was the ninth.

Five cities had no death from either typhoid or diphtheria during 1934: Elizabeth, Grand Rapids, New Haven, Seattle, Utica. It is the second successive year that Elizabeth has had a clear record for both diseases.

TABLE 9.—*Death Rates from Typhoid in 1934*

Honor Roll: No Typhoid Death (Twenty-Three Cities)

Bridgeport	Lynn	Scranton	Utica
Elizabeth	New Haven	Seattle	Waterbury
Fall River	Peoria	Somerville	Wichita
Grand Rapids	Reading	Springfield	Worcester
Jersey City	Rochester	Tacoma	Yonkers
Lowell	St. Paul	Tampa	

First Rank: from 0.1 to 1.9 Deaths per Hundred Thousand (Fifty Cities)

San Francisco	0.1	Boston	0.9†	Denver	1.4
Milwaukee	0.2*	Cambridge	0.9	Jacksonville	1.4
Newark	0.2	Canton	0.9*	Kansas City, Mo.	1.4†
Buffalo	0.3†	Knoxville	0.9	Salt Lake City	1.4*
Akron	0.4	Omaha	0.9*	Cincinnati	1.5†
Syracuse	0.5*	Philadelphia	0.9	Pittsburgh	1.5†
Chicago	0.6	Dayton	1.0†	Kansas City, Kan.	1.6
Hartford	0.6*	Duluth	1.0*	Washington	1.6†
Long Beach	0.6*	Los Angeles	1.0†	Camden	1.7
New York	0.6	Detroit	1.1†	Erie	1.7
Portland	0.6	Indianapolis	1.1†	St. Louis	1.7†
Youngstown	0.6	Flint	1.2	Miami	1.8
Oakland	0.7	Minneapolis	1.2	New Bedford	1.8
Paterson	0.7*	Providence	1.2	South Bend	1.8
Albany	0.8	San Diego	1.2†	Evansville	1.9
Cleveland	0.8	Baltimore	1.3	Wilmington	1.9
Trenton	0.8*	Toledo	1.3†		

Second Rank: from 2.0 to 4.9 (Eleven Cities)

Columbus	2.0†	Tulsa	2.7	Atlanta	3.9†
Louisville	2.5	Houston	2.8	Dallas	4.3
Nashville	2.6†	El Paso	3.8	San Antonio	4.9
Spokane	2.6†	Richmond	3.8†		

Third Rank: from 5.0 to 8.9 (Nine Cities)

Norfolk	5.4	Oklahoma City	5.9	Chattanooga	8.1
Birmingham	5.8†	Des Moines	6.2	Memphis	8.4†
Fort Worth	5.9	Fort Wayne	6.7	New Orleans	8.9†

* All the typhoid deaths reported were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.

TABLE 10.—*Number of Cities with Various Typhoid Death Rates*

	No. of Cities	10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1916-1910	77	75	2	0	0	0	0
1911-1915	79	58	19	2	0	0	0
1916-1920	84	22	32	30	0	0	0
1921-1925	89	12	17	48	12	0	0
1926-1930	92	3	10	30	37	12	0
1930	93	2	6	30	23	22	10
1931	93	2	6	23	28	22	12
1932	93	1	7	13	29	29	14
1933	93	0	7	18	19	33	16
1934	93	0	9	11	27	23	23

There are twenty cities in 1934 with rates of 2.0 and over (table 9, second and third ranks), as against twenty-five in 1933; but in 1934 nine have rates over 5.0, whereas in 1933 there were only seven with such high rates (table 10). The highest rate for both years is about the same (8.9 for 1934 and 9.1 for 1933).

TABLE 11.—*Total Typhoid Rate for Seventy-Eight Cities, 1910-1934* *

	Population	Typhoid Deaths	Typhoid Death Rate per 100,000
1910	22,573,435	4,637	20.54
1911	23,211,341	3,950	17.02
1912	23,835,399	3,132	13.14
1913	24,457,989	3,285	13.43
1914	25,091,112	2,781	11.08
1915	25,713,346	2,434	9.47
1916	26,257,550	2,191	8.34
1917	26,865,408	2,016	7.50
1918	27,086,696†	1,824†	6.73
1919	27,735,083†	1,151†	4.15
1920	28,244,878	1,088	3.85
1921	28,859,062	1,141	3.95
1922	29,473,246	963	3.26
1923	30,087,430	950	3.16
1924	30,701,614	943	3.07
1925	31,315,598	1,079	3.44
1926	31,929,782	907	2.84
1927	32,543,966	648	1.99
1928	33,158,150	628	1.89
1929	33,772,334	537	1.59
1930	34,386,717	554	1.61
1931	35,137,915	563	1.60
1932	35,691,815	442	1.24
1933	35,691,815	423	1.18
1934	35,401,715	413	1.17‡

* The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita, Wilmington.

† Data for Forth Worth lacking.

‡ The rate for the ninety-three cities in 1934 is 1.25 (total population 37,437,812, typhoid deaths 470), whereas the corresponding rates for 1930, 1931, 1932 and 1933 were respectively 1.64, 1.68, 1.34 and 1.24.

Of the twenty cities with 1934 rates of 2.0 and over, only four are Northern cities (Columbus, Des Moines, Fort Wayne and Spokane).

The total of typhoid deaths for the ninety-three cities is exactly the same in 1934 as in 1933 (470), but owing to the new method of estimating the city populations, mentioned earlier in this article, the rate for 1934 appears a shade higher (1.25) than the 1933 rate (1.24). For the seventy-eight cities for which we have complete data since 1910 (table 11), the 1934 total of typhoid deaths is ten less than the 1933 total, and the 1934 rate is 1.17, compared to 1.18 in 1933.

TABLE 12.—*Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

	(1933) Population	Typhoid Deaths		Typhoid Death Rates					
		1934	1933	1934	1933	1932	1931	1926-1930	1925
New England	2,624,805	14	18	0.53	0.68	0.72	1.07	1.31	2.48
Middle Atlantic	12,952,300	82	102	0.63	0.78	0.97	1.06	1.40	2.97
South Atlantic	2,367,307	50	55	2.11	2.31	2.23	4.29	4.50	7.01*
East North Central	9,643,100	88	54	0.91	0.55	0.70	1.00	1.29†	2.32†
East South Central	1,242,600	61	61	4.91	4.91	6.20	4.09	8.31	13.00
West North Central	2,704,500	40	41	1.48	1.51	1.03	1.34	1.83	3.43
West South Central	1,934,800	105	106	5.43	5.40	5.20	6.97	7.32‡	13.08‖
Mountain and Pacific	3,968,400	30	33	0.75	0.82	0.87	1.07	1.80	2.33

* Lacks data for Jacksonville and Miami.

† Data for South Bend for 1925-1929 are not available.

‡ Lacks data for Oklahoma City in 1926.

‖ Lacks data for Oklahoma City.

In four of the eight geographic divisions of the country (table 12) there were fewer typhoid deaths in 1934 than in 1933, and in three other divisions there were either exactly the same number as in 1933 or one less. The 63 per cent increase in typhoid deaths in the East North Central cities exactly offsets the decreases recorded for the other divisions. Even so, the different divisions have about the same relative typhoid rates in 1934 as in previous years. The cities of four divisions—New England, Middle Atlantic, East North Central and Mountain and Pacific—record very little typhoid, all having had rates below 1.0 for the past three years and all (except for the 1934 check in the East North Central group) having had a continuous decline in rate during the same period. The West North Central group (table 6) stands alone with consistent rates between 1.0 and 1.5. The three Southern groups have their usual order in 1934: South Atlantic (rate 2.11), East South Central (4.91) and West South Central (5.43). The rates of the South Atlantic and West South Central cities have remained about level for the past three years, the level in both groups being well below their rates for 1931 and for 1926-1930. The East South Central group rates, on the other hand, have been higher in the past three years than in 1930 and 1931.

While the total number of typhoid deaths in the ninety-three large cities of the United States was the same in 1934 as in 1933, two points in the 1934 typhoid history are encouraging as to the possibility of further reduction in the urban deaths from this disease: three cities finished their fourth consecutive year without a single typhoid death; and Atlanta, whose rate had continued through 1931 at its 1916-1920 level, has consistently lowered its typhoid mortality by 30 or 35 per cent for each of the past three years.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

SCHOTT'S BUTTER KRUST BREAD SLICED SCHOTT'S BUTTER KRUST FAMILY LOAF

The Schott's Bakery, Inc., Houston, Texas, submitted to the Committee on Foods a white bread prepared from patent flour, water, sucrose, powdered skim milk, shortening (hydrogenated cottonseed oil), salt, malt extract and a yeast food containing monocalcium phosphate, sodium chloride and potassium bromate, called Schott's Butter Krust Bread and Schott's Butter Krust Family Loaf. The sides of the pans in which the bread is baked are oiled with butter. Other than this, no butter is used. The top crust of the bread is not treated with butter. Approximately 0.02 ounce of butter is added to each pound loaf pan.

Discussion of Name and Label.—The name "Butter Krust" indicates either that the baking formula contains considerable milk-fat or butter or that the entire bread crust has been specially treated with sufficient butter to impart a distinctive butter flavor. Butter, however, is not an ingredient of the bread. Powdered skim milk rather than whole milk is used in the baking formula. The buttered portion of the crust has no characteristic butter flavor. The name implies the entire crust is buttered, which is not the case, gives undue prominence to an ingredient, butter, which is present in insignificant quantity, and is therefore inappropriate, misinformative and misleading. Foods should be truthfully and appropriately named with regard to ingredients.

The manufacturer was given the recommendations and criticisms of the Committee but has not taken action to correct the name. This product will therefore not be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

HEINZ STRAINED APRICOTS

Manufacturer.—H. J. Heinz Company, Pittsburgh.

Description.—Strained cooked apricots retaining in high degree the natural vitamin and mineral content.

Manufacture.—Selected ripe unsulphured apricots are sorted, pitted, trimmed, slightly cooked in steam-jacketed kettles, strained in an atmosphere of steam, vacuumized to remove air, filled into lacquer-lined cans, sealed under "vacuum" and processed. Canned, unsweetened solid-pack product may be used instead of fresh fruit; this is heated before being strained, canned and processed as described.

Analysis (submitted by manufacturer).—

	per cent
Moisture	84.2
Total solids	15.8
Ash	0.7
Fat (ether extract)	1.0
Protein (N × 6.25)	1.2
Reducing sugars as invert sugar	10.8
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	12.1
Calcium (Ca)	0.02
Phosphorus (P)	0.03
Iron (Fe)	0.002

Calories.—0.6 per gram; 17 per ounce.

Micro-Organisms.—Bacteriologic and incubation tests show the product to be sterile.

Vitamins.—Vitamin biologic assay shows:

175 Sherman units of vitamin A per ounce
4 Sherman units of vitamin B per ounce
10 Sherman-Bourquin units of vitamin G per ounce

Chemical assay shows:

45 International units of vitamin C per ounce

Claims of Manufacturer.—Specially intended for infants, children and convalescents and for special smooth diets. Only warming is required for serving.

HAWAIIAN CROSS BRAND HAWAIIAN PINEAPPLE (FANCY QUALITY) SLICED AND TIDBITS
KING OF HAWAII HAWAIIAN PINEAPPLE (FANCY QUALITY) SLICED AND TIDBITS
HAWAIIAN PINEAPPLE TIDBITS (FANCY QUALITY)
FLOWER LAND HAWAIIAN PINEAPPLE—BROKEN SLICES
MOUNTAIN TOP HAWAIIAN PINEAPPLE—BROKEN SLICES
HAWAIIAN STAR HAWAIIAN PINEAPPLE (STANDARD QUALITY) SLICED AND TIDBITS
SURE HIT BRAND HAWAIIAN PINEAPPLE (STANDARD QUALITY) SLICED AND TIDBITS

Distributor.—Alexander & Baldwin, Ltd., Honolulu, Hawaii.

Packers.—Kauai Pineapple Company, Kalaheo, Kauai; Baldwin Packers, Ltd., Lahaina, Maui; and the Maui Pineapple Company, Kahului, Maui (subsidiaries).

Description.—Grades of sliced and broken sliced pineapple and pineapple tidbits, packed in pineapple juice with added sucrose.

Manufacture.—Ripe pineapples are peeled and cored, and the ends cut off by "Ginaca" machines. The fruit cylinders produced are trimmed of imperfections, washed and mechanically sliced. The slices are packed by hand in cans and covered with pineapple juice containing added sucrose. The pineapple is graded, according to physical appearance and amount of sugar added to the juice, as "fancy" (the most perfect fruit and the highest concentration of sugar in the juice), "standard" and "broken slices." The filled cans are heated to about 75 C., are sealed, processed at 88 C. and cooled. The broken slices are not as perfect in form as the whole and half slices.

Analyses (submitted by distributor).—

Fancy finest quality.—

	per cent
Moisture	74.7
Ash	0.4
Fat (ether extract)	0.02
Protein (N × 6.25)	0.4
Reducing sugar as invert sugar	18.6
Sucrose	2.8
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	23.3
Titratable acidity as citric acid	0.9
Alkalinity of ash (cc. normal acid required to neutralize ash of 100 Gm. sample)	5.2

Standard quality.—

	per cent
Moisture	79.0
Ash	0.4
Fat (ether extract)	0.02
Protein (N × 6.25)	0.3
Reducing sugar as invert sugar	15.4
Sucrose	1.1
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	19.0
Titratable acidity as citric acid	1.0
Alkalinity of ash (cc. normal acid required to neutralize ash of 100 Gm. sample)	4.0

Broken slices.—

	per cent
Moisture	80.6
Ash	0.4
Fat (ether extract)	0.02
Protein (N × 6.25)	0.4
Reducing sugar as invert sugar	12.6
Sucrose	2.7
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	17.4
Titratable acidity as citric acid	0.9
Alkalinity of ash (cc. normal acid required to neutralize ash of 100 Gm. sample)	4.4

Calories.—*Fancy finest quality:* 1.0 per gram; 28 per ounce.
Standard quality: 0.8 per gram; 23 per ounce.
Broken slices: 0.7 per gram; 20 per ounce.

Vitamins.—Biologic assay shows the products to be a good source of vitamins A, B and C containing only slightly less than fresh pineapple.

ZIM'S BETTER WHEAT BREAD

MADE FROM WHITE AND WHOLE WHEAT FLOURS

Manufacturer.—The Zim Bread Company, Colorado Springs, Colo.

Description.—White flour and whole wheat flour bread made by the straight dough method (method described in THE JOURNAL, March 12, 1932, p. 889), prepared from water, clear flour, whole wheat flour, sucrose, yeast, shortening, salt, malt syrup, sugar, refiners' syrup and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture	34.0
Ash	1.3
Fat	3.7
Protein (N × 6.25)	11.3
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	49.0

Calories.—2.8 per gram; 80 per ounce.

VAN CAMP'S STERILIZED EVAPORATED MILK

Manufacturer.—Van Camp Milk Company, Indianapolis.

Description.—Sterilized, unsweetened evaporated milk.

Manufacture.—Milk is received from state and company inspected farms and is tested daily for odor, acidity and temperature. The milk is preheated to 97-99 C., partially evaporated under vacuum, homogenized, cooled to 38 C., standardized to 7.8 per cent milk fat and 26 per cent total solids content, canned and sterilized at minimum of 116 C. for fifteen minutes.

Analysis (submitted by manufacturer).—

	per cent
Total solids	27.3
Ash	1.6
Milk fat	7.8
Protein (N × 6.38)	7.6
Lactose (by difference)	9.1

Calories.—1.4 per gram; 40 per ounce.

Claims of Manufacturer.—See announcement on the advertising of the Evaporated Milk Association (THE JOURNAL, Dec. 19, 1931, p. 1890).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 8, 1935

SOY BEAN MILK IN INFANT NUTRITION

Although the use of the soy bean for human consumption is comparatively new in this country, it has for many centuries occupied a prominent position in the dietary of the Orient. In China, Japan and Manchukuo the soy bean aids in supplying the population with nitrogenous food. This product is also employed extensively as food in the Philippines, Siam, Korea, the Dutch Indies and India. More recently much interest in the investigation and use of soy bean preparations has been evident throughout the world.[1] The nutritive efficiency of the soy bean was demonstrated by the extensive investigations of Osborne and Mendel.[2] These results were in striking contrast to those obtained by the same investigators with kidney beans and garden peas. The presence of both the water-soluble and fat-soluble vitamins in the soy bean was also established by the New Haven investigators.

The use of the soy bean, incorporated in a synthetic milk as an infant food, was early studied in the United States by Ruhräh.[3] He was able to produce improvement in infants with summer diarrheas and certain forms of intestinal disturbances. Ruhräh also mentioned the value of soy bean milk as a diluent for cow's milk and stated that the product permits normal development in successful feeding. Despite this pioneer work, soy bean milk has not until recent years received serious consideration in this country as a definite food for babies. This vegetable milk has been employed quite extensively in China, as economic stress and the relatively small consumption of dairy products in China are important factors in the promotion of the soy bean as a food substitute for cow's milk. The studies of Chang and Tso[4] at Peiping University have served to stimulate interest in the use of the soy bean in infant feeding. The Chinese investigators prepared a synthetic vegetable milk the proteins of which were supplied by the soy bean. Six infants, one from birth and the others a few weeks old, were successfully fed for from six to nine months on this diet. Their weight curves followed closely the average weight curves of healthy nursing infants in the United States as well as the average weights of several hundred Chinese breast-fed infants who visited the college dispensary for minor complaints.

Recent reports of the use of soy bean milk in this country have substantiated the value of this product in infant feeding. Although the synthetic preparations used have differed somewhat in their formulas, the results have been uniformly favorable. Thus Rittinger and Dembo[5] fed soy bean milk to fifty physically normal or average infants over a period of a year. The progress in weight and state of nutrition indicated that the soy bean, with the addition of sugars and various mineral salts, can be made an adequate food for infants. The stool was somewhat more bulky than that observed in infants fed cow's milk, but the flora resembled that of the normal, breast-fed baby. Supplementary experiments by these investigators, conducted with rats, demonstrated the presence of adequate amounts of necessary vitamins in the preparation employed.

The economic features (mass production and low cost) of soy bean milk as an infant food share importance with the utilization of this material for the feeding of infants with milk idiosyncrasy. Furthermore, it is evident that the development of a food, free from milk protein, which is capable of maintaining infant nutrition, should furnish definite proof of the allergic nature of infant eczema. Studies of this question have been conducted in the department of pediatrics of the Harvard Medical School.[6] Experimenting with powders of varying composition, the Boston investigators evolved a dried preparation in which the protein was furnished by the soy bean and which on reliquefaction constituted a milk well tolerated by the digestive tract of infants and capable of maintaining their nutrition. Although the results were not favorable in every case, this method of feeding allergic infants has helped in a large enough number of cases to recommend it as worthy of trial. Further laboratory data are accumulating to support the early evidence concerning the adequacy of soy bean flour in nutrition. Stearns[7] has recently investigated the relation of the intakes of nitrogen, calcium and phosphorus on the excretion and retention of these elements by infants on milk diets in comparison to the results obtained with the same infants given soy bean feedings. The detailed analytic reports indicate that the modified soy bean food appears to be a satisfactory product for infants. Other experiments

1. Howarth, A. A.: J. Indust. & Engin. Chem. **9**: 136 (May 10) 1931.
2. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **20**: 351, 1915.
3. Ruhräh, John: Arch. Pediat. **26**: 496, 1909.
4. Tso, Ernest: Chinese J. Physiol. **2**: 33 (Jan.) 1928. Chang, K. C., and Tso, Ernest, ibid. **5**: 199 (May 15) 1931.
5. Rittinger, F. R., and Dembo, L. H.: Arch. Pediat. **44**: 1221 (Dec.) 1932.
6. Hill, L. W., and Stuart, H. C.: A Soy Bean Preparation for Feeding Infants with Milk Idiosyncrasy, J. A. M. A. **93**: 985 (Sept. 28) 1929. Hill, L. W.: Infantile Eczema, ibid. **96**: 1277 (April 18) 1931.
7. Stearns, Genevieve: Soy Bean Flour in Infant Feeding, Am. J. Dis. Child. **46**: 7 (July) 1933.

on laboratory animals [8] have demonstrated the adequacy of soy bean powders in nutrition, particularly with respect to supporting normal growth, hemoglobin formation and the production of normal bones. There appears to be considerable evidence, therefore, to warrant the conclusion that the soy bean is destined to assume a rôle of importance in infant nutrition.

REFORM IN RADIO ADVERTISING

At last these United States seem to be en route to reform in the type of advertising promoted over the radio. For some time the National Broadcasting Company has been quietly and consistently elevating the standards of material permitted to be broadcast over its network. The Columbia Broadcasting System has just made available an announcement by its president setting forth the new policies which will guide that network for the future.

Briefly the new policies involve purification in the type of material broadcast to children both as entertainment and as advertising. The Columbia Broadcasting System will not permit broadcasting for any product that describes graphically or repellently any internal functions, symptomatic results of internal disturbances, or matters that are generally not considered acceptable in social groups. This policy will specifically exclude from advertising not only all laxatives as such but the advertising of any laxative properties in any other product. It will further exclude the discussion of depilatories, deodorants and other broadcasting which by its nature represents questions of good taste in connection with radio listening. Among other basic advertising policies will be the barring of testimonials that cannot be authenticated, and an attempt to bar claims that are false and unwarranted.

This new trend in the control of radio advertising must logically be associated with several evidences of endeavors by the government to control in various ways the evil of exaggerated and fraudulent advertising, which has been gradually pyramided during the last thirty years into a structure that would inevitably sooner or later have toppled of its own weight. Among the handwritings on the wall are the passage by the Senate of the new Copeland bill, which, though utterly inadequate, is nevertheless a beginning in the direction of legislation to control advertising, and also hearings recently held by the Federal Communications Commission on the subject of education by radio.

The House of Delegates of the American Medical Association at its sessions in 1933 and again in 1934 adopted resolutions opposing misleading radio broadcasting. In pursuance of this action of the House of Delegates, two representatives of the headquarters office of the American Medical Association appeared before the hearings conducted by the Federal Communications Commission in Washington on May 15. Dr. W. W. Bauer, director of the Bureau of Health and Public Instruction, emphasized the interest of the American Medical Association in proper education in the field of health and indicated the manner in which radio education is involved in its program. He also recounted some of the experiences of the medical profession in attempting to secure adequate broadcasting in the field of health not only over the national chains but also over various local outlets. Dr. Arthur J. Cramp, director of the Bureau of Investigation, presented a statement with respect to "patent medicine" advertising on the radio, supplementing his presentation with typewritten copies of phonographic records that had been made of five "patent medicine" announcements. His statement covered particularly broadcasts recently made for Peruna, Willard's Tablets, Ex-Lax, Alka-Seltzer and Crazy Crystals, and he provided the Federal Communications Commission with details regarding these "patent medicines."

Great nations move slowly in their efforts for reform, but eventually an annoyed and deceived but too tolerant public rises in its wrath and reacts against those who abuse its tolerance.

THE EFFICIENCY OF SERODIAGNOSTIC TESTS FOR SYPHILIS

The report of the committee on the evaluation of serodiagnostic tests for syphilis in the United States appears in this issue of THE JOURNAL.[1] Facts pertaining to the serologic tests or modifications of such tests as have been described in the United States are given in detail. The committee has avoided entirely any comment on the method of any one serologist. The relative efficiency of the several tests is evident, however, if one cares to analyze the report. The study was comprehensive and the results are comparable with those attained in the conferences held some years ago under the auspices of the League of Nations in Copenhagen and Montevideo.

In the actual performance of the tests, the participating serologists were not gathered in one place to examine specimens over a short period of time. The advantage was given them of performing these examinations in their own laboratories. The evaluation study in this country differed from the former conferences also in the selection of presumably nonsyphilitic donors. In Copenhagen and Montevideo, such donors were selected from general hospital patients who were believed not to be infected with syphilis. In the evaluation study as conducted in this country, the nonsyphilitic donors were made up of a specially selected group in which there was reason to believe that the incidence of syphilis would be considerably lower than in a general hospital population.

8. Reid, E.: Chinese J. Physiol. **9**: 27, 1935.

1. Cumming, H. S.; Hazen, H. H.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A.: The Evaluation of Serodiagnostic Tests for Syphilis in the United States, this issue, p. 2083.

Of much interest is the relative efficiency of flocculation tests as compared with complement fixation tests for syphilis. Generally speaking, the former compared most favorably with the more complex serologic procedures both in specificity and in sensitivity. This was true especially when such tests were applied in the examination of blood serum. It was not true to the same extent, however, when the application was made to spinal fluid. The variation in specificity and in sensitivity from the highest to the lowest percentage was more definite in the spinal fluid examinations than in the blood specimens, and the percentage of positive reports in known neurosyphilitic spinal fluids was low in the case of several of the flocculation procedures. This indicates that the flocculation tests for spinal fluid examination should be given further study.

One of the most interesting conclusions of the evaluation committee is that a highly sensitive flocculation test alone might be employed as a routine procedure to exclude syphilis. The evidence available indicates that when such a test is employed a negative result would practically eliminate the presence of syphilis as demonstrable by any other serologic method. However, because of the highly sensitive character of the flocculation procedure a positive test would not be indisputable evidence of syphilitic infection. A further recommendation therefore is made that, when a positive result is reported with the routine highly sensitive flocculation test, the serum should be reexamined by one or more specific complement fixation or flocculation tests. The majority of serologic tests for syphilis performed in the laboratories of the country are negative. The routine adoption of such a highly sensitive flocculation test in comparison with the routine performance of a combination of two or more serologic tests would be an important factor in reducing the cost of the serodiagnosis of syphilis. Such a method of serologic testing seems to be worth a trial and may offer a solution for the present high cost of this work in laboratories.

Information was not obtained with regard to the practical application of the individual serologic procedures as employed in laboratories throughout the country, nor is a specific statement made with regard to the cost of the several procedures evaluated. Such factors are of the utmost importance, especially the practical application of serologic tests in private and public health laboratories.

The recommendation was made that the reporting of the qualitative results in the serodiagnosis of syphilis be simplified. A similar recommendation was made by the League of Nations after the Copenhagen conference. The adoption of a different set of symbols to express the degree of positivity by every serologist who describes a new method or modification has been most confusing to the physician in the past. The committee is to be commended for its insistence on a simplified method of reporting in which all qualitative results are reported as positive, doubtful or negative.

Current Comment

THE MONUMENT FOR JANE TODD CRAWFORD

Memorial Day for 1935 was marked by an unusual feature from the point of view of the medical profession. In Danville, Ky., the Kentucky State Medical Association dedicated a monument to the memory of Jane Todd Crawford, who, 126 years ago, voluntarily submitted herself to the first ovariectomy. This monument is perhaps the second ever dedicated anywhere in the world to a heroic patient, the first being that of Jean Baptiste Jupille, the shepherd boy who fifty years ago was given the Pasteur treatment after he had courageously fought a mad dog and saved the lives of six children. Already a monument stands for Ephraim McDowell, the noted physician who performed the operation on Mrs. Crawford. Today his name is high among those who have contributed largely to the advancement of abdominal surgery. At a time when anesthesia and asepsis were as yet unknown, these two—Ephraim McDowell and Jane Todd Crawford—wrote large their names in the history of medicine. Today, through the advancement of medical science, it is possible to perform the most difficult operations almost anywhere in the world. In 1809 such an operation involved on the part of the surgeon the sureness of scientific skill, the courage of his convictions, and the willingness to hazard personal reputation for the life and health of his patient; for the patient, the ability to bear inexpressible agony, the courage to risk an unestablished medical procedure, and a comprehension of the hazards involved. It is well that monuments should stand side by side to both physician and patient who cooperated in this memorable action and that the medical profession of the state of Kentucky should have assumed the responsibility for the erection and dedication of these two memorials.

BACTERIA IN KANSAS DUST

The recent dust storms in certain districts of the western part of the United States have been accompanied apparently by unusual numbers of cases of "dust pneumonia." Such a coincidence might well excite interest in the comparative numbers and types of bacteria in the air during a dust storm as compared with those present on an average quiet day. A study of this type has been reported recently.[1] Petri dishes containing sterile nutrient agar culture mediums were exposed for varying periods during a severe dust storm. The plates were incubated for twenty-four hours and the colonies then counted. Control plates were exposed in a similar manner on a clear, calm day. A striking difference between the numbers of colonies on the two plates was found. The plates exposed for one minute on a calm day contained only twelve colonies, whereas those exposed for only half this time during a dust storm showed 1,100 bacterial colonies. Microscopic

1. Ritter, C.: Bacterial Content of the Kansas Dust Storm on March 20, 1935, Pub. Health Rep. **50**: 622 (May 3) 1935.

examinations of a number of the colonies from the latter plates have indicated that the organisms carried by the dust were largely resistant soil types, usually large, spore-forming, gram-positive bacilli. No coccus forms were found. The latter observation may be of particular importance for, unless the presence of increased numbers of pathogenic bacteria can be established, there is no reason to associate the occurrence of "dust pneumonia" with a mere increase in the number of bacteria in the air. The effect of the dust may be entirely mechanical, inducing changes in the mucous membrane of the trachea and bronchi, which permit the passage of pathogenic organisms usually present in the upper respiratory tract to the bronchi and lungs.

REREGISTRATION UNDER THE HARRISON NARCOTIC ACT

Physicians registered under the Harrison Narcotic Act must reregister on or before July 1. Each such physician must register with the collector of internal revenue of each district in which he maintains an office or a place for the treatment of patients. Failure to register within the time allowed by law makes a physician liable to a fine or to imprisonment, or to both, and compels him to pay a penalty of 25 per cent on his annual tax when he does register.

Association News

THE ATLANTIC CITY SESSION

Fraternity and Club Dinners

The Ohio State Medical Alumni will hold their dinner at the Ambassador Hotel, Atlantic City, June 12, 6:30 p. m.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45 Chicago daylight saving time (3:30 central standard time). The next three broadcasts will be as follows:

June 13. Summer Camps, C. C. Bean.
June 20. Burns, W. W. Bauer, M.D.
June 27. Blood and Fire, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15 Chicago daylight saving time (3 o'clock central standard time). The next three broadcasts will be as follows:

June 11. See announcement of broadcasts from annual session.
June 18. Only One Pair of Eyes, W. W. Bauer, M.D.
June 25. The Nation's Birthday, W. W. Bauer, M.D.

Radio Broadcasts from Atlantic City and Philadelphia

Through the courtesy of the National Broadcasting Company and the Columbia Broadcasting System, the American Medical Association will broadcast health talks to the public in connection with the annual meeting at Atlantic City, June 10 to 14.

The talks over a network of the National Broadcasting Company will originate in the studios of Station WFIL, at Philadelphia, according to the following schedule (eastern daylight saving time):

June 11, 5–5:15 p. m. The Polio Situation, by Dr. J. P. Leake.
June 13, 6–6:15 p m. News Features from the Convention, W. W. Bauer, M.D.
June 14, 5–5:30 p m. Medicine in North America:
Nutrition and the Health of the Race, by Dr. James S. McLester.
Truth in Therapeutics, by Dr. Jonathan C. Meakins.
Speakers to be introduced by Dr. Morris Fishbein.

The talks over a network of the Columbia Broadcasting System will originate in the studios of Station WPG, Atlantic City, according to the following schedule:

June 10, 5–5:15 p. m. Sidelights on Sleep, by Dr. Glenville Giddings Jr.
June 14, 3:15–3:30 p. m. Problems of the Hard of Hearing, by Dr. Austin A. Hayden.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bills Introduced.—H. 496, seeking to amend the workmen's compensation act, among other things, proposes to require an employer to furnish medical and surgical treatment to a worker disabled in an industrial accident during the first ninety days (rather than sixty days) of disability and to raise the employer's liability for such services to $300, rather than $100, as the present law provides. H. 479, to amend the workmen's compensation act, proposes to require an employer to furnish medical and surgical treatment to a worker disabled in an industrial accident, during the first four months of disability, and to raise the employer's liability for such services to $300. H. 448 proposes to create a board of chiropody examiners and to regulate the practice of chiropody, which the bill defines as the medical, surgical, electrical, mechanical and manipulative treatment of ailments of the human foot.

ARKANSAS

District Meetings.—The Third Councilor District Medical Society was addressed at DeValls Bluff, April 5, among others, by Dr. Eugene M. Holder, Memphis, on acute surgical conditions of the abdomen.——Speakers before the Fifth Councilor District Medical Society at Magnolia, April 9, included Dr. Royal J. Calcote, Little Rock, on "Corneal Ulcer."——Dr. Ray M. Balyeat, Oklahoma City, addressed the Fourth Councilor District Medical Society in joint session with the Jefferson County Medical Society at Pine Bluff in April on asthma.——At a joint meeting of the Second Councilor District Medical Society with the woman's auxiliary at Batesville, April 8, speakers were Drs. Silas C. Fulmer, Little Rock, on "Diagnosis of Heart Failure"; Ernest H. White, Little Rock, "Prophylaxis of Pyelitis of Pregnancy" and Frederick H. Krock, Fort Smith, "Occlusive Arterial Disease of the Extremities."——Speakers before the First Councilor District Medical Society of Arkansas, May 8, in Monette, included Drs. Jones H. Lamb, Paragould, on "Pernicious Anemia"; William C. Colbert, Memphis, "Systemic Manifestations of Focal Sepsis"; Elmer H. Rainwater, Walnut Ridge, "How to Treat Rectal Patients"; William W. Walker, Memphis, "Obstetrical Complications of the Last Trimester of Pregnancy"; Herbert Fay H. Jones, Little Rock, "Urologic Backache," and Herbert H. McAdams, Jonesboro, "Surgical Management of Goiter."

CALIFORNIA

Personal.—The twentieth anniversary of Dr. John L. Pomeroy as the first full time county health officer of Los Angeles was observed with a dinner dance at the Oakmont Country Club in Montrose, April 25.

Regulations on Cream Custard Fillings.—At a meeting of the California State Board of Public Health, April 20, a resolution was adopted that will increase the protection of the public against food poisoning from contaminated cream custard fillings. According to the new regulations, only efficiently pasteurized milk may be used. The temperature and time of

heating the mixture shall be, as a minimum, the equivalent of a temperature of 140 F. for one hour, provided however that other temperatures and times may be used when specifically approved by the director of public health. When finished cooking, the custard must be immediately transferred into previously sterilized containers, properly covered, and chilled without delay to 50 F., and must be kept in a cooling room until used in making pastries. The resolution further regulates the display of these products, the cleansing of the cooking apparatus and the selling and delivery. In the resolution, the board acknowledges that poisoning with the toxins of staphylococci present in foods is becoming more common.

CONNECTICUT

Society News.—Dr. Nathan B. Van Etten, New York, addressed the Hartford County Medical Association, Hartford, April 2, on medical economics.

Bills Enacted.—The following bills have become laws: H. 1264, to permit chiropractors to render the "medical treatment" which an employer must furnish a workman injured in the course of his employment, and H. 1270, amending the chiropractic practice act so as to require the secretary-treasurer of the board of chiropractor examiners to furnish a bond in the sum of $1,000 with such sureties as are acceptable to the state treasurer.

DISTRICT OF COLUMBIA

Medical Bills in Congress.—S. 2939, introduced by Senator Copeland, New York, proposes to require the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art in the District of Columbia to Dr. Ronald A. Cox, Washington, without examination.

University News.—Karl F. Meyer, Ph.D., director of the Hooper Foundation and professor of bacteriology, University of California Medical School, San Francisco, gave the sixth and last lecture of the Smith-Reed-Russell series for this year at George Washington University School of Medicine, May 14. He spoke on "Selvatic Plague," with illustrations. In the afternoon Dr. Meyer addressed the medical faculty and guests on psittacosis. Col. Percy M. Ashburn, superintendent of Columbia Hospital, Washington, gave the fifth lecture in the series, April 25, on "The Medical History of the Conquest of America in the Sixteenth and Seventeenth Centuries."

FLORIDA

Bill Enacted.—H. 29 has become a law, providing for a system of compensating workmen for injuries arising out of and in the course of their employments and for such diseases or infections as naturally or unavoidably result from such industrial injuries. The employer is to furnish medical, surgical and other remedial treatment, nursing and hospital service, medicines, crutches and apparatus for such period as the nature of the injury or the process of recovery may require. Only in the event that the employer fails to furnish the services, after request by the workman, is the workman to be allowed the privilege of selecting his own physician at the employer's expense.

ILLINOIS

State Medical Election.—Dr. Rolland L. Green, Peoria, was chosen president-elect of the Illinois State Medical Society at its annual meeting in Rockford, May 23, and Dr. Charles B. Reed, Chicago, was installed as president. Vice presidents elected are Drs. Thomas H. Culhane, Rockford, and Fred H. Muller, Chicago. Dr. Harold M. Camp, Monmouth, was reelected secretary for the twelfth time and Dr. A. J. Markley, Belvidere, treasurer for his twenty-third term.

Bill Introduced.—S. 515, to amend the laws regulating the practice of medicine, proposes to enumerate specific causes for which the department of registration and education may revoke or suspend licenses and to designate the procedure to be followed by the department in revoking or suspending licenses. This bill is apparently designed to obviate certain constitutional objections to the present Illinois medical practice act pointed out in *Schireson* v. *Walsh*, 187 N. E. 921; THE JOURNAL, Aug. 4, 1934, p. 367.

Chicago

Personal. — Dr. Ludvig Hektoen, director of the John McCormick Institute for Infectious Diseases and chairman of the Committee on Scientific Research of the American Medical Association, has been appointed a member of the board of trustees of Science Service, representing the National Research Council.

Society News.—Speakers before the Chicago Society of Internal Medicine, May 27, included Dr. Anton J. Carlson on "The Problem of Control of the Endocrine Glands."—Dr. Edward W. Alton Ochsner, professor of surgery, Tulane University of Louisiana School of Medicine, New Orleans, gave the sixth annual Stephen Walter Ranson Lecture, sponsored by Theta chapter of Phi Beta Pi Fraternity, May 31, at Northwestern University Medical School; his subject was "Postoperative Treatment Based on Physiological Principles."

Dr. Grinker to Head New Department.—Dr. Roy R. Grinker, associate professor of neurology, Graduate School of Medicine, Division of Biological Sciences, University of Chicago, will be in charge of the new department of psychiatry, the establishment of which was recently made possible by a grant of $168,000 from the Rockefeller Foundation (THE JOURNAL, May 25, p. 1914). Dr. Grinker will return to the university, July 1, after two years abroad spent in research and study in psychiatry under a fellowship from the foundation. Research into the causes and cure of mental diseases will be carried on in the new division, which will be organized within the department of medicine. It will be opened July 1.

IOWA

Conference on Child Development.—The ninth annual Iowa Conference on Child Development and Parent Education will be held in Iowa City, June 17-19. The health of the young child will be the theme of the lectures and round tables of the meeting, which is held in conjunction with the eighth health education conference of the American Child Health Association in Iowa City, June 19-22. In addition to members of the faculty of State University of Iowa College of Medicine, the following will participate:

Dr. Frederick H. Allen, director, child guidance clinic, Philadelphia.
Vivian T. Thayer, educational director of the Ethical Culture School, New York.
Miriam Van Waters, superintendent, Reformatory for Women, Framingham, Mass.
Charles-Edward A. Winslow, Dr.P.H., professor of public health, Yale University School of Medicine, New Haven, Conn.
John E. Anderson, Ph.D., director, Institute of Child Welfare, University of Minnesota, Minneapolis.
Dr. Joseph H. Kinnaman, director, child health and health education, Iowa State Department of Health, Des Moines.

LOUISIANA

Personal. — Dr. Amédée Granger, New Orleans, received the honorary degree of doctor of science at the diamond jubilee celebration of Tulane University recently.

State Medical Election.—Dr. Hiram W. Kostmayer, New Orleans, was chosen president-elect of the Louisiana State Medical Society at its annual meeting in New Orleans, April 29-May 1. Dr. Courtland P. Gray, Monroe, was installed as president and the following vice presidents were elected: Drs. Louis B. Long, Lafayette, Henry L. Gardiner, Crowley, and Rhett G. McMahon, Baton Rouge. The next annual session of the association will be held in Lake Charles.

MAINE

State Medical Meeting at York Harbor, June 23-25.—The eighty-third annual session of the Maine Medical Association will be held at York Harbor, June 23-25, with headquarters at the Marshall House. The morning sessions will be given over to round table conferences, while at the afternoon sessions the following program will be presented:

Dr. Edward H. Risley, Waterville, Acute Pancreatitis.
Dr. Thomas A. Foster, Portland, The Tonsil Problem.
Dr. Harold M. Goodwin, Bangor, Modern Treatment of Pelvic Inflammation.
Dr. Harry Archibald Nissen, Boston, Significance of the Life Course, or Level of Functional Activity of the Arthritic: A Study Based on Comparison of a Hundred Dead and Four Hundred Living.
Dr. William Holt, Portland, Radium Therapy for Carcinoma of the Uterus.
Drs. Harris P. Mosher and Alexander S. MacMillan, Boston, The Esophagus from a Clinical and Roentgenologic Viewpoint.
Dr. Charles B. Popplestone, Rockland, The Rôle of the Pituitary Gland in Endocrine Dysfunction.
Drs. Eugene H. Drake, Richard S. Hawkes, and Mortimer Warren, all of Portland, Maine's First Epidemic of Trichinosis.

At this meeting, fifty year service medals will be presented to the following eligible physicians: Edward S. Abbott, Bridgton; George F. Bates, Yarmouth, Herbert J. Patterson, Portland; J. Frederick Hill, Waterville, and Horace J. Binford, Mexico. These medals will be presented at the annual banquet, Tuesday evening, when the principal speaker will be Dr. Walter L. Bierring, Des Moines, President, American Medical Association; his subject will be "American Medical Association and Plans for Economic Security."

MASSACHUSETTS

Celebration in Honor of Dr. Morse. — The seventieth birthday of Dr. John Lovett Morse, professor emeritus of pediatrics, Harvard Medical School, Boston, was observed at a dinner, April 22, given by former house officers and pupils. A charcoal portrait of Dr. Morse was presented to him; the artist was Mr. Dwight Shepler. Dr. Richard M. Smith was toastmaster.

Society News.—Dr. John H. Stokes, Philadelphia, addressed the annual meeting of the Massachusetts Society for Mental Hygiene, April 23, on "The Doctor, the Public and the Syphilis Problem."——Dr. Elliott C. Cutler, Moseley professor of surgery, Harvard University Medical School, Boston, was elected president of the Associated Harvard Clubs at its annual meeting recently.

Bill Introduced.—H. 2147, to supplement the workmen's compensation act, proposes that whenever an employee claims compensation for an industrial disease his claim is to be submitted by the industrial accident board to three referees, selected by the board from a list, submitted by the board of registration in medicine, of licensed physicians skilled in the diagnosis and treatment of industrial diseases. After investigation, the referees are to report their findings of medical fact to the industrial accident board.

Dr. Rosenau to Retire. — The retirement this year of Dr. Milton J. Rosenau, since 1909 Charles Wilder professor of preventive medicine and hygiene, has been announced. Aged 66, Dr. Rosenau graduated from the University of Pennsylvania School of Medicine in 1889 and pursued graduate work at the Institute of Hygiene, Berlin, Pasteur Institute, Paris, and Institute of Pathology, Vienna. He was a surgeon in the U. S. Public Health and Marine Hospital Service from 1890 to 1909, and director of the hygienic laboratory of the Marine Hospital from 1899 to 1909. In that year he was named professor of preventive medicine at Harvard and in 1922 was made professor of epidemiology in the Harvard School of Public Health. A portrait of Dr. Rosenau was presented to the medical school, May 14, by a committee of Dr. Rosenau's colleagues, including Drs. Elliott P. Joslin, Boston, chairman; Harvey Cushing, New Haven, Conn., Henry D. Chadwick, Newton, Reid Hunt, Boston, Samuel C. Prescott, Brookline, Edwin B. Wilson, Wilson G. Smillie, Boston, Joseph W. Schereschewsky, Boston, and Lloyd D. Felton. The work of Jacob Binder, Boston, the portrait will be hung in the faculty room of the administration building of the school.

MICHIGAN

University News. — The Sternberg Memorial Medal has been awarded by the executive faculty of the University of Michigan Medical School to William George Gordon; this is an annual prize given to the medical student who has the best record in preventive medicine. The Wee Kim Lim scholastic key was awarded to student Robert Toru Masuhara for his work in roentgenology. This key was established by the Michigan Alpha chapter of Alpha Lambda, the international Chinese fraternity, to be presented to a distinguished senior medical student each year.

Society News.—Dr. Thomas K. Gruber, Eloise, was chosen president-elect of the Wayne County Medical Society at its annual meeting in Detroit, May 20. Dr. Robert C. Jamieson, Detroit, was installed as president. Dr. Martin H. Hoffmann, Detroit, was elected secretary. Dr. Arthur T. McCormack, Louisville, secretary, Kentucky State Medical Association, discussed "Medical Service in a Changing World" at this meeting. The society was addressed by Dr. Douglas W. Owen at its meeting, April 15; his subject was "Vienna, the Mecca of Medicine in the Europe of Today." At a recent meeting the society adopted a resolution commending the action of the House of Delegates of the American Medical Association at the special session in Chicago, February 15-16. The resolution was introduced by Drs. Henry A. Luce and John R. Boland, Detroit.—— Dr. George C. Burr, Detroit, discussed common urinary infections before the Livingston County Medical Society, May 3. ——Dr. Wingate Todd addressed the Detroit Pediatric Society, May 6, on "X-Ray Studies of Mineralization in Children." ——At a meeting of the Bay County Medical Society in Bay City, May 15, Dr. Walter J. Wilson, Detroit, spoke on "Low Blood Pressure."——Dr. Clarence H. Crego Jr., St. Louis, discussed "The Operative Correction of Lower Extremity Length Inequality" at the Grace Hospital, Detroit, May 10. ——Dr. George S. Bond, Indianapolis, discussed "Hypertension and Coronary Artery Diseases" before the Calhoun County Medical Society in Battle Creek, May 7.

MISSOURI

State Medical Election.—Dr. Edwin Lee Miller, Kansas City, was inducted into the presidency of the Missouri State Medical Association at its annual meeting in Excelsior Springs, May 8, and Dr. Ross A. Woolsey, St. Louis, was chosen president-elect. The next annual session will be held at Columbia in 1936.

Society News.—The woman's auxiliary to the St. Louis County Medical Society sponsored a public relations program, March 29. Drs. Hyman I. Spector, assistant health commissioner, and Richard S. Weiss, assistant professor of clinical dermatology, Washington University School of Medicine, discussed tuberculosis and cancer, respectively. Also a motion picture on malaria was shown.——Dr. Grandison D. Royston, St. Louis, discussed "Trauma During Labor" before the Cape Girardeau County Medical Society, April 8.——Speakers before the Cass County Medical Society in Harrisonville, March 14, included Dr. Lotis V. Murray, Pleasant Hill, on "Carcinoma of the Cervix."——The Greene County Medical Society was addressed, March 22, by Drs. Frank R. Teachenor, Kansas City, and Meyer Wiener, St. Louis, on "Brain Injury" and "Plastic Surgery of the Eye," respectively.——At a meeting of the Pettis County Medical Society in Sedalia, March 18, Drs. Leroy A. Calkins, Kansas City, and Harold L. Gainey, Kansas City, Kan., spoke on "Treatment of Menorrhagia" and "Use and Abuse of Cesarean Section," respectively.

NEBRASKA

Bill Enacted.—H. 587 has become a law, prohibiting the retail distribution or sale of barbital, sulphonethylmethane (Trional), sulphonmethane (Sulphonal), diethylsulphon diethylmethane (Tetronal), carbonal, paraldehyde and chloral or chloral hydrate or chlorbutanol, except on the prescription of a licensed physician, dentist or veterinarian.

NEW JERSEY

State Medical Election. — Dr. Francis R. Haussling, Newark, was chosen president-elect of the Medical Society of New Jersey at its annual meeting in Atlantic City, May 2. Dr. Marcus W. Newcomb, Browns Mills, was inducted into the presidency of the association and Drs. Spencer T. Snedecor, Hackensack, and William G. Herrman, Asbury Park, were elected vice presidents.

NEW YORK

State Medical Election.—Dr. Floyd S. Winslow, Rochester, was chosen president-elect of the Medical Society of the State of New York, and Dr. Frederic E. Sondern, New York, installed as president, at the annual meeting, May 14. Dr. Daniel S. Dougherty, New York, was reelected secretary. The next annual meeting will be held in New York.

New York City

Death from Radium Poisoning.—A young woman died of radium poisoning, March 18, after several years' illness, according to the New York *Times*. She had worked for six years in several plants painting luminous faces of watches and clocks with a brush, pointed by wetting on the lips and tongue.

Hospitals Report Increased Costs.—Twenty-four general and special Catholic hospitals in New York with a bed capacity of 4,178, reported a total operating cost of $3,605,176 in 1934, an increase over 1933 of $249,036. They gave 350,000 days of free care to more than 12,000 patients at a cost of $1,759,530. Inpatients during the year numbered 54,650, of whom only 32 per cent paid regular hospital rates. The city paid for about a third; a little more than 14 per cent paid something and 21 per cent paid nothing, it was said. Seven hospitals operated clinics in which 39,459 were treated, an increase of almost 2,000 over 1933. The hospitals had an operating deficit of $188,681.

Data on Health Center Plan. — The New York City Department of Health recently published a "Handbook of Statistical Reference Data," prepared by the committee on neighborhood health development. It contains information concerning the seven health center districts already established under the newly created bureau of district health administration, with information on population and causes of sickness and death in all the thirty districts that will be eventually included in the plan. The statistics are selected and arranged by districts in order to allow the health administration to plan for the special problems of each. Such information as nationality, rentals of homes, birth rates, infant and maternal mortality and facts that have a bearing on the type of health program needed are included.

Personal.—The Richmond County Medical Society gave a dinner in honor of Dr. Walker Washington, Staten Island, April 9, celebrating his fiftieth anniversary in the practice of medicine. Dr. Washington, a native of Virginia, now 74 years old, is president of the Tottenville National Bank.——Dr. Victor Mildenberg, director of the bureau of preventable diseases, New York City Department of Health, was guest of honor at a banquet recently at the Hotel Granada, marking thirty years of service with the department. Speakers were Drs. Robert Olesen of the U. S. Public Health Service and John H. R. Barry.——Dr. John L. Rice, health commissioner, has been designated official representative of the American Public Health Association to the congress of the Royal Sanitary Institute of England, to be held in Bournemouth, July 15-20.

NORTH CAROLINA

Society News.—Drs. Charles R. Bugg and Adlai S. Oliver, Raleigh, addressed the Wake County Medical Society, March 12, on "Unusual Pneumonias in Children" and "Chronic Cervicitis," respectively.——Speakers at a meeting of the Iredell-Alexander Counties Medical Society, Taylorsville, March 12, were Drs. James W. Davis, Statesville, on "Surgery of the Prostate"; Joseph S. Holbrook, "The Electrocardiogram in Cardiovascular Disease," and Milton B. Clayton, "Eye Findings Associated with Cardiovascular Disease."——Dr. Laurence J. Rhea, Montreal, addressed the Buncombe County Medical Society, April 1, on "Development and Course of Peptic Ulcer."——Dr. John S. Lundy, Rochester, Minn., addressed the Forsyth County Medical Society, Winston-Salem, March 6, on anesthesia.——Dr. Francis Bayard Carter, Durham, gave a paper on "Nonconvulsive Toxemias of Pregnancy" before the Eighth District Medical Society at Asheboro, April 9.

OHIO

Physician Honored.—Dr. Benjamin S. Kline, Cleveland, received the 1935 Charles Eisenman Award of the Jewish Welfare Federation of Cleveland, March 31, in recognition of his contributions to medical science. Dr. Kline immediately presented the award, a check for $1,000, to Mount Sinai Hospital, where he is director of laboratories, for further research. Among contributions cited were Dr. Kline's research on pneumonia and discovery of a precipitation test for diagnosis and exclusion of syphilis. Dr. Kline is assistant professor of pathology at Western Reserve University School of Medicine.

Fifth District Annual Meeting.—The fifth district of the Ohio State Medical Association held its annual meeting in Cleveland at the Allen Memorial Medical Library, May 17. Dr. Francis M. Rackemann, Boston, addressed an evening session combined with a meeting of the Academy of Medicine of Cleveland, on "The Rôle of Allergy in General Medicine." Among speakers at the day sessions were the following Cleveland physicians:

Dr. Vernon C. Rowland, Treatment of the Chronic Dyspeptic.
Dr. Russell L. Haden, Agranulocytosis, Its Prevention and Treatment.
Dr. James L. Reycraft, Management of Hypertension.
Dr. Robert S. Dinsmore Jr., Management of Peritonitis.
Dr. Abraham Strauss, Treatment of Cancer of the Breast.

PENNSYLVANIA

Memorial to Woman Physician Proposed.—The class of 1918 at Bryn Mawr College, Bryn Mawr, plans to raise $50,000 to establish a library of chemistry and physics in a new science building at the college as a memorial to the late Dr. Marjorie Sharps Jefferies Wagoner, a member of the class. Dr. Wagoner was the college physician for twelve years. She died, June 22, 1934.

Bills Passed.—H. 2742 has passed the house, proposing to prohibit the sale of barbital, sulphonethylmethane (trional), sulphonmethane (sulphonal), diethylsulphone diethylmethane (tetronal), bromdiethylacetylcarbamide (carbromal), chloral or choralhydrate, chlorbutanol, phenylcinchoninic acid (cinchophen), atophan, atoquinol, dinitrophenol, dinitrophenol sodium and dinitrocresol sodium, except on the written prescription of a licensed physician, dentist or veterinarian.

Philadelphia

Dr. Frazier Honored.—The *Annals of Surgery* devoted a recent issue to papers contributed by students and associates of Dr. Charles H. Frazier, John Rhea Barton professor of surgery at the University of Pennsylvania School of Medicine. An appreciation of Dr. Frazier was contributed by Dr. Alfred Stengel, vice president of the university in charge of medical affairs. Dr. Frazier, who is also professor of neurosurgery in the graduate school of medicine, has been a member of the faculty since 1895, having served as dean from 1901 to 1910.

Society News.—The meeting of the Philadelphia County Medical Society, May 8, was devoted to addresses on anemia. Speakers were Walter J. Crocker, V.M.D., on "Architecture of the White Cells with Reference to the Schilling Count"; Drs. Max M. Strumia, Bryn Mawr, "The Blood as a Tissue with Special Reference to the Red Cell," and William Egbert Robertson, "The Anemias from the Clinical Standpoint."——Drs. Richard P. Custer and Edward B. Krumbhaar, among others, addressed the Pathological Society of Philadelphia, May 9, on "The Histopathology of the Hemopoietic Tissues in Hemophilia."

Student Prizes Awarded.—Three prizes in the annual student research competition at the University of Pennsylvania School of Medicine were awarded at a meeting of the Undergraduate Medical Association, April 25. Thomas E. Machella, Eckley, a senior, won the first prize, the Mary Ellis Bell award, for a technic for clocking the speed of blood flow in dogs. The John G. Clarke Prize went to Tzvee N. Harris, Philadelphia, a junior, for a study on immunizing factors in horse and human blood serum. The third prize, the Grayhe Simpson Priestley award, was given to Julian A. Sterling, Philadelphia, a junior, for a study on the presence and formation of antibodies in bile.

RHODE ISLAND

Dr. Kraus Awarded Gibbs Medal.—The presentation of the Willard Gibbs Medal of the Chicago Section of the American Chemical Society to Charles August Kraus, Ph.D., Providence, R. I., took place, May 24, at the Stevens Hotel, Chicago, in recognition of his "outstanding work in the field of chemistry." Dr. Kraus, since 1924 professor of chemistry and director of research in chemistry, Brown University, has been field secretary of the Fellowship Board in Physics, Chemistry and Mathematics of the National Research Council since 1933, and from 1931 to 1932 was vice chairman of the division of chemistry and chemical technology of the National Research Council. He was awarded the Nichols medal in 1923.

TENNESSEE

University News.—A collection of seventy-four books, fifty pamphlets and monographs and 159 magazines dealing with malaria has been given to the University of Tennessee College of Medicine, Memphis, by Dr. William H. Deaderick, Hot Springs National Park, Ark. The gift was made in recognition of work done on malaria by Dr. James B. McElroy, professor of medicine at the university, and chief of staff of Memphis General Hospital, according to newspaper reports.

Faculty Promotions at State University.—The following physicians on the faculty of the University of Tennessee College of Medicine, Memphis, received promotions, March 28, among others:

Drs. William W. Riggs, Jerome P. Long Jr. and James M. Brockman, to be assistant professors of obstetrics.
Dr. Matthew W. Searight, associate professor of gynecology.
Dr. Isaac G. Duncan, assistant professor of urology.
Dr. Joseph I. Mitchell, assistant professor in orthopedic surgery.
Dr. Frank W. Smythe, associate professor in surgery.

Birth and Death Rates Increased in 1934.—Provisional figures issued by the state department of public health indicate that the number of recorded deaths in the state for 1934 was 29,771, with a rate of 10.9 per thousand of population, as compared with 27,599, with a rate of 10.2 in 1933. The birth rate increased from 17.8 in 1933 to 18.4 in 1934. The death rates in the principal causes of death were diseases of the heart, 146.8 per hundred thousand of population, an increase from 132.1 the previous year; pneumonia, 96.2, also an increase; tuberculosis, 88.4, a decrease from 93.8; cerebral hemorrhage, embolism and thrombosis, 78.3. Accidents and unspecified external causes increased from 66.6 to 74.3, largely because of 131 more deaths from automobile accidents. A measles epidemic resulted in a death rate of 16.3 for measles.

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended May 25, indicate that the highest mortality rate (18.3) appears for Memphis, and the rate for the group of cities as a whole (18.3). For the corresponding period last year the mortality rate was 17.1 for Memphis and 11.5 for the group of cities. The annual rate for eighty-six cities for the twenty-one weeks of 1935 was 12.5 as against a rate of 12.4 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

WEST VIRGINIA

State Medical Election.—Dr. Charles G. Morgan, Moundsville, was chosen president of the West Virginia State Medical Association at its annual meeting in Wheeling, May 7. The next annual session will be held at Fairmont.

Society News.—Dr. James Morrison Hutcheson, Richmond, addressed the Kanawha County Medical Society in a joint meeting with the Fayette County society at Charleston, April 9, on "Atypical Features of Coronary Occlusion."——Dr. Charles R. Austrian, Baltimore, was the speaker at a meeting of the Cabell County Medical Society, Huntington, April 11, on management of lobar pneumonia.——Drs. Fred B. Quincy and George W. Easley, Williamson, addressed the Logan County Medical Society, Logan, April 10, on pyloric stenosis and infection of the hands, respectively.

WISCONSIN

Personal.—Dr. Robert G. Sayle, Milwaukee, recently observed the fiftieth anniversary of his medical practice.——Dr. Bruno Schallern, Ripon, celebrated the fiftieth anniversary of his entrance into medical practice, in March.

Radiology Meeting.—The section of radiology of the State Medical Society of Wisconsin held its midyear meeting in Milwaukee, May 17-18. Guest speakers included Dr. Leo G. Rigler, Minneapolis, who gave addresses on "Roentgen Observations on the Normal and Pathologic Interlobar Pleura" and "Roentgen Study of Leukemia of the Stomach and Its Relationship to Chronic Hypertrophic Gastritis." Dr. Edward L. Jenkinson, Chicago, also spoke at the banquet on economics.

Society News.—Drs. Edwin J. Kepler and Howard K. Gray, Rochester, Minn., addressed the Brown-Kewaunee-Door Counties Medical Society at a meeting with the societies of Outagamie, Winnebago and Fond du Lac counties, April 25, on diabetes.——The annual meeting of the seventh district of the State Medical Society of Wisconsin was held in La Crosse, April 24; clinics were held at St. Francis, Lutheran, Grandview and La Crosse hospitals and addresses were made by Drs. Frederic E. B. Foley, St. Paul, Minn., and Louis M. Warfield, Milwaukee, among others, on "Importance of Early Diagnosis in Management of Ureteral Stone" and "So-Called Heart Failure in Acute Infections," respectively.——Dr. Alice Hamilton, Boston, and Carl R. Moore, Ph.D., Chicago, addressed the Medical Society of Milwaukee County, May 10, on "Industrial Medicine—A Stepchild" and "The Endocrines and Reproductive Function," respectively. The Milwaukee Professional Men's Orchestra presented a program.——Dr. Bernard Fantus, Chicago, addressed the Milwaukee Academy of Medicine, May 21, on "Some Important New and Nonofficial Remedies."

HAWAII

Territorial Election.—Dr. Guy C. Milnor, Honolulu, was installed as president of the Hawaii Territorial Medical Association at its annual meeting, April 29, and Dr. Lyle C. Phillips, Honolulu, was reelected secretary.

GENERAL

Changes in Status of Licensure.—The Massachusetts Board of Registration in Medicine reported the following action:

Dr. James P. A. Nolan, Brookline, reregistered as a physician, April 11. His registration had been revoked July 23, 1923.

The State Board of Medical Education and Licensure of Pennsylvania recently reported the following action:

Dr. Edmund B. Ilyus, Lancaster, license suspended indefinitely March 6, because of conviction on a narcotic charge. He was fined $100 and placed on probation for five years.

Society News.—Dr. Walter C. Alvarez, Rochester, Minn., was chosen president-elect of the American Association of the History of Medicine at its annual meeting, May 6, and Dr. William S. Middleton, Madison, Wis., was installed as president. The next annual session will be held in Atlantic City.——At a meeting of the American Association on Mental Deficiency, April 25, Edgar A. Doll, Ph.D., Vineland, N. J., was installed as president and Dr. Benjamin O. Whitten, Clinton, S. C., was chosen president-elect.——The American Dermatological Association elected Dr. Clarence Guy Lane, Boston, president at its meeting, May 3.——Dr. Merrill C. Sosman, Boston, was elected president of the Harvey Cushing Society at its fourth annual meeting in New Haven, May 2-4. Dr. Kenneth G. McKenzie, Toronto, Ont., was made vice president, and Dr. Louise C. Eisenhardt, New Haven, secretary-treasurer. The next annual session will be held in Rochester, Minn.

Association of Medical Milk Commissions.—The annual meeting of the American Association of Medical Milk Commissions at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., June 11, will open with a symposium on "the next step in the progress of certified milk." Included among the many speakers on the program will be Dr. John L. Rice, commissioner of health of New York City; Dr. Thomas Parran Jr., state health commissioner of New York; Dr. William W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association; Dr. Samuel J. Crumbine of the American Child Health Association, New York; Dr. Reginald M. Atwater, executive secretary, American Public Health Association, New York; Ira V. Hiscock, C.Ph., Yale University School of Medicine, New Haven, and James A. Tobey, Dr.P.H., New York. On Monday, June 10, the Certified Milk Producers' Association of America will hold its annual meeting.

Salmon Memorial Medal.—The Salmon Memorial Committee for Psychiatry and Mental Hygiene has donated to the American Psychiatric Association an award to be known as the "Salmon Memorial Medal." It will be presented from time to time by the association "to the person distinguishing himself in the field of psychiatry, by original contributions to that specialty or for outstanding accomplishment." The Salmon Committee on Psychiatry and Mental Hygiene was organized several years ago to perpetuate the memory of Dr. Thomas W. Salmon, former president of the American Psychiatric Association. The council of the association voted to accept the medal during the annual meeting in Washington, D. C., May 13-17. During this session Dr. C. Macfie Campbell, Boston, was named president-elect of the association, and Dr. Clarence O. Cheney, New York, was installed as president. Dr. William C. Sandy, Harrisburg, was reelected secretary-treasurer. It was also voted to establish permanent headquarters at the New York Academy of Medicine, 2 East 103d Street, New York.

Report on Eye Defects in School Children.—The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, with the cooperation of the National Society for the Prevention of Blindness, has published a revised edition of its bulletin "Conserving the Sight of School Children." Recent surveys indicate that about 12 per cent of all school children have defects in vision. Farsightedness is found to be first in frequency of the common defects, astigmatism second and nearsightedness third. The report recommends that schools take the responsibility for detecting eye defects and seeing that they are corrected. It is not necessary that the school furnish the services required; they may be obtained from family physicians, professional health organizations, community health centers or elsewhere, it points out. The technic of vision testing is described in some detail, and there is a chapter on lighting. Special provision for those seriously handicapped should be made, including arranging for such children to use the typewriter, teaching them to gather information through the sense of hearing, and providing books with large type for them and sight saving classes as part of regular school systems. At present about 6,000 children are enrolled in 458 sight saving classes maintained by 145 communities, but facilities are needed for about 44,000 other children, according to the National Society for the Prevention of Blindness.

Medical Bills in Congress.—*Changes in Status:* S. 5, after being amended in several respects, has passed the Senate, proposing to prevent the manufacture, shipment and sale of adulterated or misbranded food, drink, drugs and cosmetics and to prevent the false advertisement thereof. S. 2472 has passed the Senate proposing to pay an annuity to Frances Agramonte, the widow of Dr. Aristides Agramonte, a member of the yellow fever commission. S. 2584 has been favorably reported to the Senate, proposing to amend an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever," by including therein the name of Gustaf E. Lambert (S. Rept. No. 733). S. 2625 has passed the Senate, extending the facilities of the United States Public Health Service to seamen on government vessels not in the military or naval status. H. R. 6995 has been reported to the Senate, proposing to reenact all laws in effect March 19, 1933, granting pensions to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection, their widows and dependents (H. Rept. No. 974). The bill provides no pension for contract surgeons of the Spanish-American War. H. R. 7260, the Doughton social security bill, has been reported to the Senate, with amendments (S. Rept. No. 628). *Bills Introduced:* S. 2793, introduced by Senator Wagner, New York, proposes to enact a workmen's compensation act for the benefit of employees

engaged in interstate commerce. If an employer fails to provide the necessary medical, hospital and other services for an injured employee, after a request therefor, the employee may obtain them at the expense of the employer. H. R. 8109, introduced by Representative Chapman, Kentucky, proposes to authorize the erection of an addition to the existing Veterans' Administration facility at Lexington, Kentucky. H. R. 8169, introduced by Representative Monaghan, Montana, proposes to erect additional facilities to the existing veterans' facility at Fort Harrison, Montana. H. R. 8249, introduced (by request) by Representative Rankin, Mississippi, and H. R. 8294, introduced by Representative Robsion, Kentucky, propose to reenact all public laws repealed March 20, 1933, granting medical or hospital treatment, domiciliary care, compensation and other allowances to veterans of the World War and their dependents for disabilities or deaths incurred or aggravated or presumed to have been incurred or aggravated in service.

CANADA

Hospital News.—Dr. Joseph S. Stewart, superintendent of the Ontario Hospital, Toronto, has been appointed head of the Ontario Hospital at Hamilton, succeeding Dr. Joseph J. Williams, who has retired.——Sir Herbert Holt, president of the board of governors of the Royal Victoria Hospital, Montreal, has made a gift to the hospital of $200,000, to be known as the "Herbert S. Holt Foundation."

Society News.—The annual meetings of the Canadian Public Health Association, the Ontario Health Officers' Association, the Canadian Tuberculosis Association and the Canadian Social Hygiene Council will be held in Toronto, June 3-5.—— Dr. Frederick T. Campbell was elected president of the Calgary Medical Society at the annual meeting, April 2.——The College of Physicians and Surgeons of Alberta has recently begun publication of the *Alberta Medical Bulletin*.

FOREIGN

Bus Drivers and First Aid.—The Danish ministry of public works recently decreed that buses not operated exclusively in towns carry a first aid kit containing standard equipment for first aid. Bus drivers are required to have taken courses in emergency aid from the Danish Red Cross or the Workers' First Aid Association.

Sixtieth Anniversary of Health Institute.—The Institute of Public Health of the University of Budapest recently celebrated the sixtieth anniversary of its founding. The institute was established in 1874 under the direction of Prof. Joseph Fodor, a student under Pettenkofer, according to an announcement. Prof. Leon Liebermann succeeded Professor Fodor, and the present director is Prof. Julius Darányi.

International Congress on Mental Hygiene.—An announcement of plans for the second International Congress on Mental Hygiene to be held in Paris, July 27-31, 1936, states that typewritten texts of reports and communications must be sent to the chairman of the program committee before November 1. Applications to take part in the communications and discussions should be sent in advance to the chairman, Dr. René Charpentier, 119, rue Perronet, Neuilly-sur-Seine, Seine, France. It is recommended that such application be made before Jan. 1, 1936.

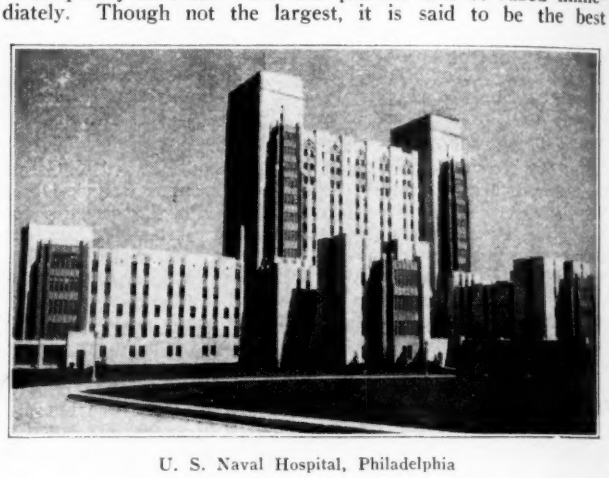
Personal.—Col. Alfred H. Proctor of the Indian Medical Service has been appointed dean of the British Postgraduate Medical School to succeed Dr. Malcolm H. MacKeith, who resigned for reasons of health.—— Dr. Howard W. Florey, professor of pathology in the University of Sheffield, has been appointed professor of pathology at the University of Oxford. ——Dr. Victor G. Heiser, who since 1915 has been connected with the Rockefeller Foundation, of which he was director for the Far East, was to retire January 1, according to the *International Journal of Leprosy*, and devote himself to furthering the work of the International Leprosy Association, of which he is president.

Society News.—The International Organization of the Campaign Against Trachoma held its annual meeting in London, April 3, in conjunction with the meeting of the International Association for the Prevention of Blindness as guests of the Ophthalmological Society of the United Kingdom. Dr. Emile de Grosz, Budapest, resigned as president of the organization against trachoma after serving since 1929. Dr. Arthur F. MacCallan, London, was elected to succeed him. ——The Tsinan Ophthalmological Society was recently organized and held its first meeting at Cheeloo University School of Medicine, Tsinan. Dr. Eugene Chan, head of the department of ophthalmology, was chairman; Dr. Chan was formerly a member of the staff of the Wilmer Ophthalmological Institute, Baltimore.

Government Services

New Naval Hospital at Philadelphia

A new $3,200,000 building for the U. S. Naval Hospital, Philadelphia, with a capacity of 650 beds, was dedicated April 12. Speakers at ceremonies were Rear Admiral William C. Watts, commandant of the Philadelphia Navy Yard; Congressman George P. Darrow, Philadelphia, who was instrumental in procuring the federal appropriation for the hospital; Mayor Hampton L. Moore; Brig. Gen. Frank T. Hines, Washington, D. C., veterans' administrator; Rear Admiral Perceval S. Rossiter, surgeon general of the navy; Rear Admiral N. M. Smith of the navy civil engineers corps; Col. Vincent A. Carroll, representing the American Legion; Harry J. Crossen, regional manager, Veterans' Administration, and Dr. J. Evans Scheehle, state secretary of welfare, representing the governor of Pennsylvania. The buildings comprise a fourteen story main hospital, nurses' quarters, hospital corps quarters, four sets of officers' quarters and a garage situated in a twenty-two acre plot in League Island Park near the Navy Yard. They replace an old building originally built in 1868, modernized from time to time and enlarged during the World War by the addition of temporary barracks. The old quarters will be razed immediately. Though not the largest, it is said to be the best



U. S. Naval Hospital, Philadelphia

appointed of all naval hospitals. In addition to navy personnel, it will care for the sick of the army, the Civil Conservation Corps, U. S. Employees' Compensation Commission and the Veterans' Administration and will also provide an outpatient clinic for the Veterans' Administration for the entire Philadelphia area. Capt. John D. Manchester is the commanding officer, with a staff of thirty-two medical and dental officers and pharmacists, twenty-five nurses and 118 corpsmen, and seventy-five civilian employees.

Colonel Keller Honored

Colonel William L. Keller, medical corps, U. S. Army, was honored, May 16, when President Roosevelt signed an act of Congress to give him full active pay for the rest of his life regardless of retirement, in appreciation of his valuable service, according to the Washington *Evening Star*. The bill also creates a new office to be known as consultant in surgery of the Army Medical Center, located at Walter Reed General Hospital. Dr. Keller will be appointed to this position, but he may retire from active duty at his pleasure and continue to receive the full pay and allowances of a colonel, it was stated. Colonel Keller, who has been chief of the surgical service at Walter Reed for sixteen years and commanding officer of the hospital for the past five years, is director of surgery in the Army Medical School. He was graduated from the Medical College of Virginia in 1899 and served as active assistant surgeon of the U. S. Public Health Service for one year, when he entered the military service as a contract surgeon. He was commissioned a first lieutenant in the medical corps in 1902 and reached the rank of colonel in 1928.

Changes in the Public Health Service

Passed Asst. Surg. Austin V. Deibert, relieved at Atlanta and assigned at Quarantine Station, San Pedro, Calif.

Asst. Surg. Arthur B. Price, relieved at Marine Hospital, Seattle, and assigned at Marine Hospital, San Francisco.

Passed Asst. Surg. Samuel J. Hall, relieved at San Francisco and assigned at Marine Hospital, Seattle.

Passed Asst. Surg. William W. Nesbit, relieved at Bryson City, N. C., and assigned at Marine Hospital, Detroit.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 11, 1935.

The Selenide Treatment of Metastases in Cancer of the Breast

The medical treatment of cancer has proved uniformly disappointing, but the recent work of Dr. A. T. Todd with selenium compounds seems to be of some promise and at present holds the field in this country. In a paper on "The Selenide Treatment of Mammary Metastases," read at the Section of Radiology of the Royal Society of Medicine, he argued that there was a defense mechanism in cancer resembling that in chronic infectious diseases. This mechanism was controlled by endothelial cells, which appeared to secrete substances that activated the rest of the tissue. These cells would take up any electronegative colloid that came their way. If the colloid was of such a chemical nature that its breakdown simulated the metabolism of the cell, a greater defense would result. Some selenium colloids had this property in the correct dosage. His method of treating cancer is to impregnate the defense tissues with this colloid and activate it by repeated small doses of x-rays.

The treatment of mammary metastases by this method varies according to the condition present. In an inoperable case with neglected primary growth, removal of this, especially if there is septic or hemorrhagic fungation, is desirable. The main mass and any enlarged gland easy of access are removed, but no attempt is made at radical removal. While healing of the incision is taking place, radium selenide is given weekly. Then 2 cc. of sulphur selenide is injected intravenously. If no reaction appears after four hours, the dose should be increased by 1 cc. the next week and so on until reaction occurs. The reactive dose is maintained until the reaction alters. A local reaction is shown by pain, stiffness or drawing sensations at the site of the growth and by increase of edema in connection with gland involvement; a general reaction is shown by malaise, nausea and occasionally a little pyrexia. The x-ray reaction usually comes on after four hours. It should be just perceptible and at most give the patient a poorish night. The average dose is 75 roentgens at 180, 30 cm. distance, and screen 0.3 mm. of zinc.

Metastases after the usual incisional surgery should be treated by the routine method after a clinical and roentgen examination of the liver, lungs and skeleton. Any metastases found should be irradiated and any suspected site also treated. Hepatic metastases are very sensitive and the liver should not receive an x-ray dose exceeding 25 roentgens. Metastases after radium surgery (the radium dose calculated to cause necrosis) are usually nonreactive and the prognosis is not so good. Radium appears to break down all defenses, and metastases seem to appear more quickly and at unusual sites; the patients usually fail to react to selenide treatment.

Dr. Todd thought that in the prophylactic treatment of supposed surgical cure the selenide treatment was likely to do most good. He recommends that every patient regarded as being surgically cured should have the full treatment for a year. Here reaction will be no guide. Colloid should be about 4 cc., x-rays about 75 roentgens. Dr. Todd has not treated such patients, as his time is fully occupied in trying to improve the system and in working on cases otherwise untreatable. Although no special precautions are taken, recurrence is never seen in the incision, notwithstanding that it is so frequent otherwise.

RESULTS

The results were given in twenty-seven cases of mammary metastases, quite inoperable and refused further treatment by surgeon and radiologist; few were likely to have survived for more than a few months. Five patients are still under treatment. One of these has had continuous treatment for five years, another for four years; both are reasonably well. Two are doing well. One is doing badly. Two patients died from pneumonia, one year and eighteen months respectively after apparent cure. The necropsy in one failed to show any signs of carcinoma. Twelve patients are dead; most of them exceeded their expectation of life and about half had prolonged periods of relief from symptoms. Eight patients have been discharged as apparently cured. In four cases apparent cure has persisted for one year, in the other four for two years.

Drug Addiction Replaced by Tea Addiction in Egypt

Russell Pasha, chief of police in Cairo, in the report for 1934 of the Central Narcotics Intelligence Bureau, has given interesting details on drug addiction in Egypt. Statistics show how the work of the bureau has progressed in consequence of the growth of the international conscience as to the drug traffic. There is a steady decline in the number of addicts and the quantity of drugs seized at the frontiers. Unfortunately, drug addiction has taken another, though less injurious, form. A rapid growth of tea drinking has occurred among the Egyptian fellaheen. Strong tea dust is boiled and reboiled and the beverage is taking the place of cannabis and diacetylmorphine, with disastrous results. Some of the fellaheen spend almost all their daily wage on tea and now cannot work without it, with the result that their physique is deteriorating. A village headman has made the statement that where formerly four men hoed an acre daily now eight are needed. Russell Pasha says that it is a sociomedical problem of vital importance to Egypt to discover how to wean these people from the use of stimulants. Narcotics would have been a more accurate term.

Heavy Oxygen Water Isolated

After two years of research a young Manchester physicist, J. B. M. Hervert, lecturer on physical chemistry at Manchester University, and Dr. M. Polyani, also of that university, have succeeded in isolating heavy oxygen water; i. e., water composed of hydrogen and the heavy isotope of oxygen. This is believed to be the first time heavy oxygen water has been obtained in this country, but two years ago it was obtained by Professor Hertz in Berlin. Heavy oxygen water must be distinguished from heavy hydrogen water (composed of heavy hydrogen and oxygen), which was discovered a few years ago in the United States. The chief advantage of heavy oxygen is that it will facilitate research in advanced organic chemical reactions. In ordinary water, heavy oxygen water is present to the extent of about one part in 500.

Deaths Due to House Fumigation

Two children have lost their lives from a cause unprecedented in this country—the fumigation of infested houses. Cyanide fumigation of a row of four houses was performed one evening and the occupants were allowed to return on the following day. They noticed the smell of the fumigating gas and an unpleasant taste in the mouth. They went to bed as usual. At 3 a. m. physicians were called. A girl, aged 5 years, was dead and another, aged 1 year, was found unconscious in another house. She was taken to a hospital and oxygen was administered but she also died. Three women, one man and a boy, aged 8 years, were also taken ill but recovered. At the inquest, evidence was given that the fumigation was done by a firm that specialized in the process and under the instructions of the health authorities. The man who performed it had six years' experience and had fumigated 1,000 houses without a mishap. He explained the process. The house was sealed up and then he put on a gas mask and conducted the fumigation.

At 9:30 p. m., when he finished, he saw that every cupboard was open and also the doors and windows, so as to get full ventilation. He was satisfied that everything was all right and did not leave until 11:30 p. m. He then placed a notice on the doors and delivered the keys to the health inspector. On being questioned he agreed that hydrogen cyanide was slower in getting away from padded furniture and bedding. He tested the atmosphere and bedding before leaving. When he left there might be some trace of gas in the house, as there would be for some days. The coroner did not think that there was anything in the evidence showing wilful negligence, which would justify a verdict of manslaughter. The jury returned a verdict of "death from misadventure" but added a rider that "in future, owing to the dangerous nature of the gas, more competent supervision should be given and two men should be employed, and the final certificate for reentry of the house should be given by the health officer."

PARIS

(From Our Regular Correspondent)

May 3, 1935.

Defects of the Social Insurance Law in France

Dr. Pibrie, a practitioner in the southwestern portion of France, published an article in the March 9 issue of the *Journal des praticiens* on defects of the social insurance law in France. To facilitate the comprehension of certain portions of the article, explanatory notes will be added.

Dr. Pibrie states that the law has now been in operation for more than four years and that he has come in contact with a sufficiently large number of the assured to be able to form a judgment as to its merits and defects. He takes up the latter first.

PREMIUMS

According to the social insurance law, any employee who earns less than 15,000 francs (about $1,000) is obliged to be insured. The premium varies according to the wages, calculated on an annual basis. The employer is obliged to pay one half of the monthly premium and the employee the other half.

Pibrie states that at the period (1930) when the law went into effect the employer did not object to paying his portion of the premium. It was considered as an extra tax but was not felt to be a burden until the economic crisis struck France, a little later than in other countries. The employer now feels that these premiums are a source of expenditures without any corresponding financial return, and recourse has been taken in one of two ways by some at least of the employers. They have either raised the price of their products, which of course has been passed on to the consumer with resultant augmentation of the cost of living, or they have adopted a simpler plan, consisting in discharging employees, thus adding to the government's burden of aiding the unemployed, with the result that increased taxes make living more costly for those who are employed.

On the side of the employee, many have found that the obligatory monthly premium is a burden. Workers in nonagricultural pursuits feel that the amount they are obliged to contribute is out of proportion to that paid by those engaged in agriculture, which is only one fifth of that paid by those not working on farms.

UNNECESSARY FORMALITIES IN PAPER WORK

According to Pibrie, the formalities in paper work are excessive. Perhaps, as he jokingly asserts, they are made so to discourage the sick worker from asking recompense for a single medical consultation and prescription. The assured, after having been examined and prescribed for by the physician, must go to the nearest city hall to ask for a blank to be filled out by the employer. The latter must then be requested to state that the employee has paid his share of the premiums regularly. (The employer is obliged to send in a monthly statement with his half of the premium, giving the names and amounts paid by each employee according to the wages earned in the corresponding month.) Then the sick assured must return to the city hall to be given the blanks to be filled out by the physician and the pharmacist. The latter two must next be visited to have the sickness blanks filled out, which are to be sent to the local combined examining and disbursing governmental office, termed the Caisse. Altogether, for a single illness, there are about seven calls to be made to comply with the regulations regarding reimbursements.

REIMBURSEMENTS

According to the social insurance law, no indemnity can be claimed for the first four days of any illness. In France, the assured worker has the privilege of choosing his own physician, whom he pays directly without waiting for the Caisse to reimburse him. There are two methods, one according to which payment for each medical visit is made immediately by the Caisse and a second, at the termination of a long illness. In the former case the fee schedule established by the joint action of the Caisse and the representatives of the medical profession vary according to different "departments" (counties) of France. Pibrie states that in his locality a physician charges 18 francs ($1.25) for a house and 15 francs ($1) for an office visit. The Caisse reimburses the assured to the extent of 9.5 francs for either without discrimination. According to the law, the assured should receive from 80 to 85 per cent of his medical expenses, but the figures quoted show that only 50 per cent is paid for house calls and 64 per cent for office consultations.

In the case of "lump sum" reimbursement, a curious situation has arisen, which has been the subject of legal procedures against the Caisses. The assured cannot claim indemnity for any single illness for a period longer than six months. He can then claim a "lump sum" for any medical outlays made during such period. After the lapse of the six months, two months must elapse without reimbursement before another six months period can begin. In such illnesses as syphilis, tuberculosis, malaria or diabetes, which are of longer duration than six months, the position of the assured, who must pay his own medical expenses during the two months interval, is not an enviable one, especially when he has paid his premiums regularly for years. This six months limit of indemnity was inserted in the original law to avoid fraud, but it has led to much misery; hence a modification is now being discussed to suppress the two months interval.

Pibrie states that the amount allowed by the Caisses for illness, operations and confinements is far below the actual expenses incurred by the assured.

SUPERVISION OF THE SICK ASSURED

The supervision of the sick assured is twofold; viz., by the Caisse and by the medical man who represents it. Unless the latter is broadminded and keeps abreast of the progress constantly being made by his nongovernmental paid colleagues, there is constant friction as to the amounts to be allowed the assured for medical outlays. Pibrie also maintains that some of the nonmedical officials of the Caisses conduct themselves toward the assured in an unnecessarily arbitrary manner. To avoid unnecessary medical visits, the medical supervisor possesses the power of appealing to the departmental (county) medical association, who can expel a member convicted of collusion with a sick insured worker. The law still allows too many opportunities for friction between the nonmedical officials of the Caisses or local collecting and disbursing agencies and their own medical control representative, not only as to the diagnosis and treatment of ailments but also as to the reimbursements to be given for certain maladies.

HOW TO CORRECT THE DEFECTS

As to premiums, Pibrie believes that the employer should not be called on to pay more than half the amount paid by the employee, since the former derives absolutely no benefit from the law. As to the paper work, a simple medical certificate, without diagnosis, stating that X is suffering from an illness of slight, moderate or severe degree, given to the employer should suffice. This certificate can be sent to the city hall, as in the case of industrial accidents, by the employer, who also sends his own certificate at the same time. As to reimbursing the assured, they ought to receive nearly as much as they are obliged to pay out for house and office visits of their medical attendants. The fees allowed for operations are also inadequate, so that the assured must make up the difference. A limit of six months for chronic ailments is also a hardship on such patients and overlooks the fact that the law was made to aid the sick worker and not to exhaust his savings. If control is needed in a given case, it should be the task of the medical supervisor of the Caisse, and this visit should take place in the presence of the attending physician, so that the latter can justify the number of visits made and help to verify the diagnosis. Control by civilian officials of the Caisse should be made, say, within one month after the filing of the sickness blank. Altogether the law in France at least is far from ideal. It has been modified a number of times and still needs to have important changes made.

BERLIN

(From Our Regular Correspondent)

April 1, 1935.

New Decisions on Sterilization and Castration

The Berlin Medical Society took recently as the theme of its session the subject "A Year of the Sterilization Law." A jurist emphasized that, as far as possible, a petition requesting sterilization should be filed by the patient with the hereditary defect. The decision of the eugenics court may often be rendered without the person affected appearing, which saves the patient the pain of an unpleasant hearing. In many cases (for example, in cases of epilepsy) an examination of members of a family is necessary.

According to Professor Gohrbandt, sterilization of the man should be confined to a so-called blocking operation, in which one may choose between vasoligation, vasofissure, vasoresection and destruction of the epithelium. The intervention may be carried out without pain. Gohrbandt himself prefers resection; he resects a portion 6 cm. long, in order that no patient, after the operation has been performed, may conceive the notion of having the severed portions of the spermatic cord reunited. Whether the seminal vesicles contain spermatozoa is not definitely known; but, according to experiments on animals and cadavers that he has carried out, they frequently do contain spermatozoa. Hence Gohrbandt takes the precaution, following resection, to destroy any spermatozoa that may be present.

The clinical aspects of the legal sterilization of the woman were treated by Professor Ottow, at whose school of midwifery 311 women have been sterilized. It is necessary that, before the intervention, a woman be carefully examined to determine whether an operation is indicated and, if so, how the operation should be performed. The examination should be made on admission to the hospital and should be repeated under anesthesia. Finally, a third examination must be made on opening the abdominal cavity, which is to be regarded as an exploratory laparotomy. In two of his cases, following the opening of the abdominal cavity, it was decided to desist from the operation for sterilization. In another case, a woman who had been ordered by the eugenics court to be sterilized was already sterile owing to the absence of uterus and vagina. In further cases sterilization was not resorted to, because of the discovery of cancer, aplasia of the uterus, and the like. The sterilizing operation may be performed by means of laparotomy or by the vaginal route. The abdominal operation is contraindicated in severe cases of idiocy and psychosis. The cosmetic aspects especially point to the vaginal operation; but this method should not be used if there are changes in the adnexa. The chief principle involved is, of course, to utilize a reliable blocking method to keep the sperm away from the ovum. This is best accomplished by removal of the tube, since no other method offers 100 per cent of security. In adnexa complications the sterilizing operation should not be carried out. In schizophrenic subjects there is an increased danger of infection. In his series of cases, Ottow found fifty-one instances of organic complications, in thirteen of which the adnexa were involved; in thirteen cases myomas and in thirteen cases ovarian cysts were discovered. The sterilization law does not provide for secondary operations that are justified by secondary observations; thus the operator finds himself in a difficult position, since at times an urgently indicated intervention must be carried out at his own risk, without the legally necessary permission of the patient. In 258 cases Ottow applied sterilization to women by the abdominal incision and in forty-two cases by the vaginal route. No grave complications as the result of the operations were observed; in five cases, severe hematomas developed, caused by the restlessness of the patients. No marked psychic effects of the intervention on the patients could be observed.

Professor Stoeckel, director of the Frauenklinik of the University of Berlin, stated that 100 per cent of efficiency in the sterilization of women can be demanded of no method. A few cases are bound to result fatally, since emboli occur following much less grave interventions. He regards the Madlener method as the best operation for sterilization. Of 4,000 operations in which this method was followed, only four were failures, which may be considered an optimal result. The alleged failure of this method in roentgenologic postoperative examinations is due to the fact that the roentgen contrast agent was injected under much higher pressure than was contemplated. The sterilization law provides that the tubes must be operated on and thus prescribes, in some cases, wrong operative interventions; for instance, if one must detach the tubes from a myomatous uterus and must leave the diseased uterus in the organism.

The director of the second Frauenklinik of the University of Berlin, Prof. G. A. Wagner, holds that failures after the Medlener operation are not so rare; particularly tubal pregnancies are apt to occur; in fact, they are facilitated by the intervention. Wagner does not share Ottow's hesitation about removing the tubal corners. He considers it a serious defect in the sterilization law that it insists on ligation of the tubes. In weakminded women Wagner recommends extirpation of the uterus, because such persons, after their dismissal, frequently attract undue attention from the opposite sex and may easily become victims of gonorrheal infection. Gonorrhea of the cervix is most resistant to treatment, and, in a roundabout way, the sterilization of a woman with healthy hereditary qualities might result if her husband transmitted to her gonorrhea acquired in this manner. It is evident that some valuable observations have been collected. This is apparent also from the previously published figures on the activities of various eugenics courts. In the eugenics court of Wuppertal (Rhineland), during the first year of its existence, approximately 1,000 petitions for sterilization were filed. In about 800 cases the petitions were granted, and about 600 interventions have been carried out. In the eighteen eugenics courts in Thuringia (central Germany) 3,178 petitions for sterilization have been filed, 2,472 of which have been heard before these courts. In 2,303 cases the petition was granted, and in 1,395 cases sterilization has been carried out.

The following decision tends to establish a precedent: The body having jurisdiction opposed in one instance the enrolling of a peasant family in the so-called Erbhofrolle (whereby a farm becomes indivisible and is always handed down to the oldest child), because for generations tuberculosis had been widely prevalent in this family, and advised that the farm be divided. The eugenics court, however, refused to render such a decision because of tuberculosis; for, according to present-day medical knowledge, tuberculosis is not a disease that is always transmitted to offspring. In another instance the eugenics court refused a petition for the sterilization of a student of music, the reason assigned being that in this case (by exception) sterilization should not be performed, because of the exceptional mental qualities of the patient, although, indeed, he presented a type of melancholy, or of manic-depressive insanity, which falls within the scope of the sterilization law. In all three instances of such a disorder in the student's family the precipitating cause took effect only on the appearance of external, nonhereditary factors. This was therefore a pathologic hereditary tendency of much less potency than the essential group of hereditary mental diseases, which develop of themselves without any external precipitating cause. Hence the court assumed that the offspring of this student, under normal living conditions, would probably escape an attack of the disorder. The court's second reason for its decision also establishes an important precedent: The petition involves an artist possessing unusual gifts, who is likely to transmit his gifts to his offspring. Likewise Professor Bonhoeffer, psychiatrist of Berlin, takes the attitude that the sterilization law should not be applied to persons of the type mentioned. In a family many members of which possess unusual qualities the chances of a descendant having serious hereditary defects may reasonably be risked by society if, on the other hand, valuable hereditary qualities are likely to be inherited. There are, to be sure, some jurists who object to this "exceptional treatment of persons with talents."

With reference to the expense arising from the application of the sterilization law, ministerial decisions have become necessary. If neither a krankenkasse nor a welfare organization can be expected to assume the costs, and the patient is unable to pay them, the central government must assume them.

Prof. Fritz Lenz, of the University of Berlin, called attention, in an address before the Emperor William Society for the Advancement of Science, to the danger arising out of the fact that hereditary defects are transmitted to offspring not only by persons with evident hereditary defects but also by persons who are apparently healthy. Hence it appears to him advisable to sterilize also healthy persons who might produce offspring with hereditary defects. This would apply, for example, to persons who present only slight signs of mental disease. On the other hand, from a practical point of view, a radical application of this principle is not advisable, for, according to his computation, it would affect 20 per cent of the population. Hence it is not likely that these far-reaching demands will be taken seriously by the centers having jurisdiction in the matter.

Lenz called attention to the need of combating the tendency, manifest in recent years, for the proletariat to gain possession of the intellectual professions. The danger of an increasing lowering of racial qualities—of the average intellectual level—is greater than is generally realized.

In Saarbrücken, Lenz instituted a research on children that had attended school four years, with a view to ascertaining what connection there might be between the scholarship of the pupils and the number of children in their respective families. According to this research, the average scholarship of the pupils grows less as the number of children in their respective families increases. It is evident, therefore, that the promotion of the population alone is not all that is needed. There must be also a selection of the competent pupils, or those with more than average endowments.

While such questions as this are receiving considerable attention in Germany, no special eugenics bureaus are to be created in the larger cities and districts for the solution of these problems, which, in point of fact, belong to the field of the public health services. On the other hand, an endeavor is being made to give the teachings of racial hygiene the widest publicity; for example, in the Staatsmedizinische Akademie in Berlin, a special three-day course of instruction in racial hygiene and the theories of heredity was recently organized for the benefit of the pastors.

For all the questions that have to do with racial hygiene the authorities are seeking to extend the basic knowledge. In Bavaria a card index of injuries of a hereditary and an environmental origin, as observed in clients of welfare departments, has been created in order to determine what are hereditary and what are environmental injuries. On the basis of this material, one will seek to discover what kind of treatment and care are the best for the various types.

The same purpose is served by the published observations of the Erbbiologische Bestandsaufnahme of the heredobiologic central of the League of the Krankenkassen in Berlin, concerning which the director, Dr. W. Tourné, has issued a report. About 2,000,000 "sickness cards" of the insured are being scrutinized. Approximately 400 cases are studied each month, and 2,200 cases have been studied thus far, 1,311 of which have been completed. Thus far, 606 patients have been reported to the health officer of the district as subject to the application of the sterilization law—which amounts to 46.9 per cent of the completed cases.

Of the 2,200 cases scrutinized thus far, it was found that 456 showed no evidence of serious hereditary defects; forty-one patients were too old for sterilization to be of value, and thirty-three had already been sterilized.

VIENNA

(From Our Regular Correspondent)

May 2, 1935.

The New Social Insurance Law

A new law pertaining to industrial social insurance was promulgated April 1. In keeping with the reorganization of the Austrian federal state, such a law had long been promised. The details of the drafting of the law were kept secret until the revision had been completed. By reason of the authoritarian form of government in force in Austria, no further changes in the law may now be made. It is probable that the selected representatives of the medical profession were not asked to sit in at the deliberations or, if so, were not called on to express their views. The results for the physicians have been calamitous, as has been emphasized in several medical journals. The law consists of seven principal sections, only two of which concern the medical profession directly; namely, (1) the administration of the krankenkassen for workmen and for employees, and (2) the provisions for the transition period. With regard to the latter it is important to note that, during a transition period of three months dating from the promulgation of the law, the previous arrangements will remain in force, until the public and the authorities have become familiar with the new provisions. The new law is to be effective for a period of five years. At the end of this period it will be seen what changes in the law are needed. As the law is designed to effect economies in social welfare, the previous performances for the benefit of insured members must be materially reduced. Allowances for medical aid, hospital aid, convalescence aid and vacations, cash benefits and pensions will be diminished, so that the effects on the public health will certainly not be especially favorable. Here only the provisions affecting the medical profession can

be mentioned. For the performance of common tasks, in the field of health insurance, all the krankenkassen of the workmen and all the krankenkassen of the employees will be combined to form a main league. These two groups together, along with the still existing pension-insurance organizations, will form "a federal league of social insurance institutes." In every district working mergers of the krankenkassen will be formed; on these will rest the obligation of supplying medical aid (including obstetric aid, dental aid and sick benefits). They will also have charge of financial arrangements with the physicians, and the creation and management of pharmacies and therapeutic institutions to be used in common. For the assurance of medical aid for the members and for the amicable solution of all questions that arise in that connection, every working merger will appoint a physicians' committee, to be composed equally of representatives of the working merger and the corresponding professional organization of physicians. The chairman will not be a member of the medical profession. The treatment of the members of the krankenkassen will be solely in charge of approved physicians, dentists and dental mechanics, who will be recompensed on the basis of the work performed and will no longer receive a fixed monthly compensation, as has been the rule of late in the krankenkassen. In accordance with the rules of panel practice, the physicians who apply are engaged to furnish medical aid to the insured members of the social insurance system (that is, members of the various main leagues or of the federal league), if they can fulfil the following conditions: 1. Candidates must be citizens of Austria and must have a doctor's degree from the medical department of an Austrian university. 2. Practicing physicians must have had at least four years of medical activity, with a minimum of three years' experience in a public sanatorium or hospital, and training in surgery, internal medicine and obstetrics; furthermore, at least three months' service as locum tenens of a practitioner. 3. Specialists must have had such training as entitles them to assume the title of specialist. The same rule applies to dentists, and, in addition, dentists must have had two years' experience in dental practice. 4. Every physician seeking admission to panel practice must furnish evidence of exemplary citizenship and of good professional behavior. 5. A candidate may have no further fixed income from other permanent medical employment amounting to 12,000 shillings ($2,280) a year. (This provision is designed to prevent any person from deriving a double income from public funds—a provision of questionable value.) The last mentioned provision does not apply, however, to specialists. The admission of a candidate to panel service under the social insurance act, even though he has fulfilled all these conditions, is left to the discretion of the physicians' committee, a fact that will constitute an exceedingly severe test of the uprightness of character of the persons serving on this committee. With regard to the compensation of physicians who are engaged in the social insurance service, the following principles obtain. As a rule, no fixed salaries are paid, but the services of physicians are compensated according to a point system, which is supposed to have been worked out accurately. Every physician will be compensated according to his individual performances. Every prescription or visit or other performance (operations, examinations, application of bandages, consultations, and the like) entitles him to a certain number of points. The value of the point will fluctuate, but always with the condition that the amount of money or the percentage allowed for medical aid must always be made to suffice. The compensation allowed for medical aid will thus vary from year to year. But the complications extend further. The point value for the workmen's krankenkassen may be different from the point value for the employees' krankenkassen, being dependent on the funds available in the respective treasuries. Moreover, the physicians' committee may, for special reasons, depart from the principle of compensation according to individual performances —not only in a given district or in parts of a district but also with respect to individual physicians, and instead may establish a fixed salary. Thus, the way lies open not only for arbitrary decisions but also for differentiation and discrimination among the panel physicians, which would be directly opposed to the previous regulations and which will likely furnish occasion for complaints. The regulation of the provisions applicable to the transition period is likewise important. When krankenkassen are dissolved or when their physicians are no longer permitted to serve on the social insurance panel, the following provisions come into effect: A physician who has not yet served ten years may be notified and dismissed within a year after the beginning of the operation of the new law. In that event he will be entitled to an indemnifying sum, or dismissal wage, the amount of which will depend on his length of service. If he is nevertheless admitted later to the panel, he must return such sum—in monthly payments if desired. If, however, a dismissed panel physician has served more than ten years, he may be given a pension. Any agreements previously entered into by and between the panel physicians and the krankenkassen to the effect that such panel physicians may not be dismissed from service without cause have been declared invalid. If a pensioned physician is again admitted to the panel, he will receive no pension during the time of such activity. In all these matters the physicians' committee renders a decision as it sees fit. It will be seen, therefore, what great power the committee exercises, and how wretched the lot of the medical profession has become, now that private practice has almost entirely disappeared. In line with other economic measures, a regulation has been adopted that only certain medicines may be prescribed. Such restrictions in the past have often given rise to complaints on the part of patients, because the panel physicians objected to prescribing certain "specialties." Now such complaints will doubtless become even more frequent.

In the whole law there is at least one feature that meets the desires of a large number of physicians; namely, the provision that the patient shall not be bound to accept a certain physician but may select in his home town any physician on the panel in whom he has confidence. But there is a certain danger associated with the free choice of physician, for not all physicians are admitted to the panel. It is feared that too strong an influence will be exerted by political, religious, national and economic factors. The impression that the whole law makes on the medical profession is unfavorable, and its revision will be made an urgent demand of all competent, representative physicians.

In the foregoing, the impairment of the previously recognized rights of the members of the krankenkassen has not been discussed. Of course, the members are not satisfied with the law; medical considerations are not the chief reason, although the reductions in the performances will doubtless exert considerable influence on the general public health. There will be fewer opportunities for recovery of health, fewer therapeutic aids, less support in case of illness, and fewer persons adequately insured against disease; that is, fewer persons well cared for.

Decrease in the Number of Medical Graduates

For the first time since the close of the war, the number of students in Vienna securing the degree of doctor of medicine shows a decrease. During the school year immediately preceding the outbreak of the war (1913-1914), 385 men and women obtained their doctor's degree in medicine. In 1924-1925 the number had risen to 743, and for a number of years then it did not vary greatly from this figure. In 1932-1933 the number dropped to 521, and in 1933-1934 to 442. The decrease is an evident expression of the poor economic situation of the medical profession.

Marriages

GEORGE WILLIAM CROFT, Jacksonville, Fla., to Miss Anne Capers Haselden of Charleston, S. C., May 16.

DONION RANDOLPH MARTIN, Raleigh, N. C., to Miss Mary Elizabeth Roof of Paducah, Ky., May 16.

MAURICE BAINTON THOMPSON, Bloomfield, Conn., to Mrs. Mary Waite Thomas of Hartford, May 9.

EDWARD M. HOLMES JR., Richmond, Va., to Miss Sarah Daily Walsh of Norfolk, April 27.

CLARENCE E. QUAIFE, Galesburg, Ill., to Miss Florence Hefte of Spokane, Wash., May 3.

CHARLES SUMMEY BRITT to Miss Margaret Todd, both of Charlotte, N. C., May 15.

JOHN M. KARCH, Cincinnati, to Miss Rosemarie Brinck of Dayton, Ohio, recently.

ULFERT R. ULFERTS to Miss Mary Edwina Smith, both of Mena, Ark., May 3.

CHARLES HOLMES BOYD to Miss Emily Gould West, both of Baltimore, May 24.

HENRY R. MCCARROLL, St. Louis, to Miss Nina Snyder, recently.

Deaths

Junius Claiborne Gregory ✠ Colonel, U. S. Army, retired, Evanston, Ill.; Medical College of Virginia, Richmond, 1900; fellow of the American College of Surgeons; in 1907 entered the medical corps of the army as a captain and rose through the various grades to that of lieutenant colonel in 1917; served during the World War; retired in 1922; returned to active duty in 1922 and in 1930 retired for disability in line of duty, with rank of colonel; at one time assistant clinical professor of military medicine, Rush Medical College, Chicago; aged 59; died, April 26, of thrombophlebitis with right pulmonary and coronary embolism.

Georgia Adell Filley ✠ Battle Creek, Mich.; University of Illinois College of Medicine, Chicago, 1913; member of the Medical Society of the State of New York and the American Psychiatric Association; formerly a medical missionary in China; aged 64; at one time on the staffs of the Toledo (Ohio) State Hospital and the Battle Creek Sanitarium, where he died, April 16, of atrophic cirrhosis of the liver.

Kenneth Millan, Brooklyn; Queen's University of Medicine, Kingston, Ont., Canada, 1920; member of the Medical Society of the State of New York; served with the British Army during the World War; on the staffs of the Caledonian Hospital and Brooklyn Hospital, Brooklyn, and the South Nassau Communities Hospital, Rockwell Center; aged 43; died, April 21, of meningitis.

William Ropes May ✠ New York; Harvard University Medical School, Boston, 1898; associate in diseases of children, Columbia University College of Physicians and Surgeons; served during the World War; on the staffs of the Willard Parker Hospital, Hospital for Ruptured and Crippled and the City Hospital; aged 61; was found dead in bed, May 3.

Edward Lambert Twombly, Boston; Harvard University Medical School, Boston, 1886; an Affiliate Fellow of the American Medical Association; formerly instructor in gynecology at the Tufts College Medical School; for many years on the staff of St. Elizabeth's Hospital; aged 75; died, May 10, of coronary thrombosis and carcinoma of the nose.

Harry B. Walter, Harrisburg, Pa.; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; past president of the Dauphin County Medical Society; at one time member of the board of education; for many years on the staff of the Harrisburg Hospital; aged 80; died, April 25, of intestinal obstruction.

Adelard Eugene Gendron ✠ River Falls, Wis.; School of Medicine and Surgery of Montreal, Que., Canada, 1893; past president of the Pierce-St. Croix County Medical Society; city health officer; served during the World War; on the staff of the River Falls City Hospital; aged 64; died, April 20, of carcinoma of the intestine.

Neil Sutherland MacDonald, Fort Snelling, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895; fellow of the American College of Surgeons; served during the World War; connected with the Veterans Administration Facility; aged 63; died, May 3, of angina pectoris.

James Lyman Whitney ✠ San Francisco; Harvard University Medical School, Boston, 1905; at one time instructor, assistant clinical professor and assistant professor of medicine, University of California Medical School; served during the World War; aged 53; died, March 12, of coronary thrombosis.

Clarence Kelley Gilder, Carbon Hill, Ala.; University of Alabama School of Medicine, Mobile, 1918; member of the Medical Association of the State of Alabama; past president of the Walker County Medical Society; member of the state board of health; aged 42; died, April 26, of streptococcic pneumonia.

William Edward Miller, Colwyn, Pa.; Medico-Chirurgical College of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; member of the local board of health; aged 64; died, April 12, in the Lankenau Hospital, Philadelphia, of pneumonia and acute nephritis.

Benjamin Carey Geeslin, Arkansas City, Kan.; Chicago Physio-Medical Institute, 1890; member of the Kansas Medical Society; for sixteen years a member of the board of education; aged 72; died, March 22, of coronary thrombosis, while attending a basketball game in Topeka.

John William Lee, Waterloo, Ala.; Kentucky School of Medicine, Louisville, 1890; member of the Medical Association of the State of Alabama; also a minister; aged 83; died, April 23, in the Eliza Coffee Memorial Hospital, Florence, of bronchopneumonia, following influenza.

Leslie Ambrose Kuhn, Wyatt, Ind.; Jenner Medical College, Chicago, 1906; member of the Indiana State Medical Association; veteran of the Spanish-American and World wars; aged 56; died, March 13, in St. Joseph Hospital, Mishawaka, of cerebral hemorrhage.

Peter William Fox ✠ New Britain, Conn.; University of Vermont College of Medicine, Burlington, 1911; on the courtesy staff of the New Britain General Hospital; aged 49; died, April 15, of brain tumor, chronic myocarditis and hypostatic pneumonia.

Charles Gresham McEachern, Biloxi, Miss.; University of Nashville (Tenn.) Medical Department, 1900; member of the Mississippi State Medical Association; aged 60; was killed, April 25, when the automobile in which he was driving overturned.

John Joseph Mangan, Lynn, Mass.; College of Physicians and Surgeons, Boston, 1891; Harvard University Medical School, Boston, 1904; member of the Massachusetts Medical Society; aged 77; died, March 29, of cerebral hemorrhage.

Jerry Walter Gwin, Bessemer, Ala.; University of Alabama Medical Department, Mobile, 1917; member of the Medical Association of the State of Alabama; aged 44; died, March 28, in a hospital at Birmingham, of gastric ulcer and uremia.

Clarence Edward Kylander, Pittsburgh; University of Pittsburgh School of Medicine, 1931; member of the Medical Society of the State of Pennsylvania; on the staff of the Southside Hospital; aged 34; died, April 24, of pneumonia.

Osman Franklin Kinloch, Troy, N. Y.; Albany (N. Y.) Medical College, 1879; member of the Medical Society of the State of New York; served during the World War; aged 82; died, March 31, of myocarditis and arteriosclerosis.

James Wilson Miller ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1899; at various times on the staffs of the Cincinnati General, Good Samaritan and Children's hospitals; aged 64; died, April 28, of cerebral hemorrhage.

Rushmore Lape, Fair Haven, Vt.; Albany (N. Y.) Medical College, 1877; an Affiliate Fellow of the American Medical Association; town health officer; member of the school board; aged 80; died, May 3, of coronary thrombosis.

Ernest Lowrey, Excelsior Springs, Mo.; Marion-Sims College of Medicine, St. Louis, 1892; member of the Missouri State Medical Association; aged 64; died, April 1, in St. Joseph Hospital, Kansas City, of cerebral hemorrhage.

William Nelson Giles, Wataga, Ill.; Keokuk (Ia.) Medical College, 1898; member of the Illinois State Medical Society; at one time mayor of Wataga; aged 77; died, April 25, of diabetes mellitus and coronary thrombosis.

Frank Rudisill Bealer, New York; Emory University School of Medicine, Atlanta, Ga., 1917; member of the Medical Association of Georgia; fellow of the American College of Physicians; aged 42; died, April 19.

Elery Nichols Morgan, South New Berlin, N. Y.; Baltimore Medical College, 1897; member of the Medical Society of the State of New York; aged 65; died, March 11, of chronic myocarditis and coronary embolism.

Dwight Shumway Moore, South Pasadena, Calif.; University of Nebraska College of Medicine, Lincoln, 1887; member of the California Medical Association; aged 68; died, March 16, of myocarditis.

Henry Dewey Ribble, Blacksburg, Va. (licensed in Virginia under the exemption law of 1885); member of the Medical Society of Virginia; aged 82; died suddenly, March 1, of cerebral hemorrhage.

Thomas Walker, Wynne Wood, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; member of the Oklahoma State Medical Association; aged 68; died, April 27, of endocarditis.

Abraham Groves, Fergus, Ont., Canada; University of Toronto Faculty of Medicine, 1871; medical superintendent and owner of the Royal Alexandra Hospital; aged 87; died, May 12, of pneumonia.

George Kasper Baier ✠ Washington, D. C.; Columbian University Medical Department, Washington, 1898; served during the World War; aged 59; died, April 22, of pulmonary tuberculosis.

John Mauls Ferrell, El Dorado, Ark.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; aged 52; died, recently, in the Henry C. Rosamond Memorial Hospital, of pneumonia.

Herbert Walter Longworth, Kingsport, Tenn.; University of Tennessee College of Medicine, Memphis, 1930; city health officer; aged 27; died, May 1, in a local hospital, of spinal meningitis.

Isaac Marion Gravlee ✠ Mobile, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1920; member of the Radiological Society of North America; aged 38; died, March 27.

Edward William Gahan, San Diego, Calif.; Indiana College of Medicine and Midwifery, Indianapolis, 1885; aged 72; died, March 28, of coronary thrombosis, arteriosclerosis and diabetes mellitus.

William H. Popplewell ✠ Lamar, Mo.; Barnes Medical College, St. Louis, 1898; secretary of the Barton County Medical Society; aged 60; died, April 21, of cardiovascular renal disease.

William A. Campbell, Pyriton, Ala. (licensed in Alabama in 1903); member of the Medical Association of the State of Alabama; aged 81; died, April 9, of influenza and pneumonia.

Albert Jabesh Harris ✠ Buffalo; University of Buffalo School of Medicine, 1903; aged 63; died, May 10 in the Deaconess Hospital, of cerebral hemorrhage and myocarditis.

Charles W. Austin, Mangum, Okla.; Memphis (Tenn.) Hospital Medical College, 1895; member of the Oklahoma State Medical Association; aged 74; died, April 3, of uremia.

Philip C. Marquart, Springfield, Ohio; University of Louisville (Ky.) Medical Department, 1894; member of the Ohio State Medical Association; aged 63; died, April 9.

John Ray M. Frawley ✠ Wausau, Wis.; Milwaukee Medical College, 1910; county coroner; on the staff of St. Mary's Hospital; aged 52; died, May 6, of pulmonary fibrosis.

Henry S. Morris, Mammoth Spring, Ark. (licensed in Arkansas in 1903); bank president; aged 61; died, April 17, in the Baptist Hospital, Springfield, Mo., of cholecystitis.

Joseph Graham, Washington, D. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; aged 56; died, April 29, of arteriosclerotic heart disease.

Albert Washington Lane, Gadsden, Ala.; Atlanta (Ga.) School of Medicine, 1906; member of the Medical Association of the State of Alabama; aged 52; died, April 5.

Ernest Christian Fisher, Richmond, Va.; University College of Medicine, Richmond, 1900; member of the Medical Society of Virginia; aged 59; died, April 15.

Thomas Arthur Lynch, Omaha; Creighton University School of Medicine, Omaha, 1931; aged 29; died, April 30, in St. Catherine's Hospital, of septicemia.

Alfred Earle Kinney, St. Albans, N. Y.; University of Oregon Medical School, Portland, 1914; served during the World War; aged 47; died, April 10.

John J. Shaner, Agnew, Calif.; Eclectic Medical Institute, Cincinnati, 1881; aged 83; died, March 20, in the Agnews State Hospital, of chronic myocarditis.

Archibald McEachran ✠ Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889; aged 68; died, April 11.

Arthur Henry Leary, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; aged 79; died, April 12.

James Short, Evarts, Ky. (licensed in Kentucky in 1920); member of the Kentucky State Medical Association; aged 77; died, April 21, of pneumonia.

William Alison Lumley, Ellsworth, Wis.; College of Physicians and Surgeons of Chicago, 1893; aged 77; died, April 9, of lobar pneumonia.

Francis Marion Collier, Montrose, Calif.; Denver College of Medicine, 1895; aged 76; died, March 25, of chronic myocarditis and acute nephritis.

Charles Lewis Knight ✠ Boston; Harvard University Medical School, Boston, 1901; aged 60; died suddenly, April 18, of coronary thrombosis.

Emile Claud Mervy, San Francisco; University of California Medical Department, 1883; aged 76; died, February 14, of mitral regurgitation.

Alfred Hultner, Pomona, Calif.; University Medical College of Kansas City, Mo., 1896; aged 67; died, March 2, of cirrhosis of the liver.

Magnus Andrew Unseth, Chicago; Rush Medical College, Chicago, 1893; aged 66; died, May 12, of lobar pneumonia and lymphatic leukemia.

Daniel E. Thatcher, Dallas, Wis. (licensed in Wisconsin in 1900); also a pharmacist; formerly postmaster and mayor; aged 66; died, March 17.

William Henry Mahler, New York; Bellevue Hospital Medical College, New York, 1880; aged 80; died, April 22, of bronchopneumonia.

William B. Graham, New Paris, Ohio (licensed in Indiana in 1897); Civil War veteran; aged 91; died, April 30, of cerebral hemorrhage.

Charles Albert Gill, Madison, Wis.; Rush Medical College, Chicago, 1884; aged 79; died, March 22, in a local hospital, of uremia.

Eugene O. Houck, Cleveland; Western Reserve University Medical Department, Cleveland, 1900; aged 56; hanged himself, March 23.

Elizabeth Edmonston, Hillsboro, Ohio; New York Medical College and Hospital for Women, New York, 1895; aged 79; died, April 12.

Samuel S. Watkins, Owensboro, Ky.; University of Louisville School of Medicine, 1884; aged 70; died, March 25, in the City Hospital.

Herbert Karl Smith, Modesto, Calif.; Louisville (Ky.) Medical College, 1894; aged 66; died, March 1, of cerebral hemorrhage.

Edwin Llewellyn Hunter, Niles, Mich.; Hahnemann Medical College and Hospital, Chicago, 1896; aged 60; died, March 30.

Harrison Proctor Millard, Vancouver, B. C., Canada; University of Toronto (Ont.) Faculty of Medicine, 1891; died in March.

Frederick Charles Marlow, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1915; aged 40; died, April 25.

George A. Vinson, Atlanta, Ga.; Southern Medical College, Atlanta, 1881; aged 77; died, April 26, of uremia and chronic nephritis.

Sterling Egbert Neblett, Southside, Tenn.; University of Tennessee Medical Department, Nashville, 1891; aged 75; died, April 5.

Ernest Linwood Marston, Rock Island, Ill.; Rush Medical College, Chicago, 1888; formerly bank president; aged 74; died, April 2.

Harold Winthrop Martin ✠ Boston; Tufts College Medical School, Boston, 1912; aged 48; died, April 15, at his home in Milton.

August Kuhn, Pflugerville, Texas; Louisville (Ky.) Medical College, 1894; age 66; died, February 26, of coronary thrombosis.

William A. Peek, Helena, Mont.; Homeopathic Medical College of Missouri, St. Louis, 1898; aged 66; died, March 12.

William Jefferson Guernsey, Philadelphia; Hahnemann Medical College of Philadelphia, 1875; aged 81; died, March 30.

Hansford L. Walls, Nitro, W. V.; University of Maryland School of Medicine, Baltimore, 1881; aged 73; died, March 11.

Elwin Dexter Lane ✠ Andover, Mass.; Boston University School of Medicine, 1912; aged 59; died, March 25, of uremia.

Simon Beckman, Hartsville, S. C.; Medical College of the State of South Carolina, Charleston, 1884; aged 71; died, May 7.

Clifford Henry King, Wabash, Ind.; Rush Medical College, Chicago, 1881; aged 76; died, March 16, of chronic nephritis.

Bruno Francis Sandow, Berkeley, Calif.; Northwestern University Medical School, Chicago, 1891; died, March 13.

Bureau of Investigation

MORE NOSTRUMS IN RETROSPECT

Condensed Reports on "Patent Medicines" Previously Dealt With in Greater Detail

The chief work of the Bureau of Investigation lies not, as many physicians think, in the preparation of articles that appear in this department of THE JOURNAL, but in answering the thousands of letters that are received every year from physicians and laymen asking for information on "patent medicines" and quacks. These letters show that there are certain "patent medicines" that are much more widely inquired about than others, usually because the amount of money spent on advertising ballyhoo keeps them in the public eye. About a year ago there were published in this department condensed reports of longer articles published previously on several widely advertised "patent medicines" about which the Bureau receives a large number of inquiries. The material that follows gives in condensed form statements regarding additional "patent medicines" that have already been dealt with in the past in more extended articles:

Absorbine, Jr.—This preparation was the subject of an extended article that was published in THE JOURNAL Oct. 25, 1913. Absorbine, Jr., is a liniment and, when first put on the market, was claimed to "remove any soft bunch without blistering or inconvenience" and to be "the only liniment known that positively cures varicose veins." As time went by, these obvious falsehoods were abandoned, but even at the time of the Bureau of Investigation's article it was still sold under the inferential claim that it would cure rheumatism, neuralgia, headache, varicocele, orchitis, toothache, corns, goiter, elephantiasis and several other conditions. Absorbine, Jr., was analyzed in the A. M. A. Chemical Laboratory and the chemists reported that it was a clear, bright green liquid having a strong, penetrating, mint-like odor and seemed to be an acetone extract of some plant, probably wormwood, with the possible addition of some oil of sassafras and oil of menthol. The 1935 advertising of Absorbine, Jr., is much more restricted and conservative. It has been especially featured in the past year or so as a remedy for "athlete's foot" and insomnia.

Alka-Seltzer.—This "patent medicine," put out by the Miles Medical Company of Elkhart, Ind., was dealt with in THE JOURNAL Nov. 12, 1932. At that time the entire trend of the advertising was to give the impression that Alka-Seltzer was a mild, effervescent, alkaline preparation, although, in fact, the stuff was essentially aspirin. From the analysis of the A. M. A. Chemical Laboratory, it appeared that persons following the directions to dissolve two tablets of Alka-Seltzer in a glass of water got nearly 9 grains of aspirin and nearly 1 grain of salicylic acid with their mixture of citric acid and baking soda. Those who did as was suggested and took sixteen such tablets a day would get over 70 grains of aspirin and 6 grains of salicylic acid in twenty-four hours. Recent (May, 1935) radio broadcasting advertising still plays up the alleged antacid features of Alka-Seltzer. It incidentally refers to the fact that the stuff also contains, as the broadcast ballyhoo puts it, an "acetylsalicylate." Not one non-medically trained person in ten thousand, of course, knows that an "acetylsalicylate" refers to aspirin. If one reads the small type on the trade package of today, he may learn that Alka-Seltzer, when dissolved in water, produces "Acetyl Salicylate of Sodium" described as "a salt of Aspirin." Nowhere, however, is any hint given as to the amount of aspirin present, and it is difficult to avoid the conclusion that the vast majority of people who take Alka-Seltzer are still quite ignorant of the fact that they are taking aspirin.

Bromo-Seltzer.—This preparation was dealt with in THE JOURNAL of Feb. 10, 1906. According to the analysis of Bromo-Seltzer published at that time, an average dose of the preparation—a teaspoonful, weighing about 76 grains—would contain potassium bromide, 7 grains, acetanilid, 3 grains, and caffeine, 0.8 grain. In the same issue of THE JOURNAL a Nebraska physician reported a case of poisoning from Bromo-Seltzer. The most powerful drug in Bromo-Seltzer is acetanilid. The dangerous potentialities of acetanilid make the indiscriminate use of "patent medicines" containing this drug a serious menace to the public health. Cases of death, collapse, chronic poisoning and "habit" have been reported in medical literature from the use of Bromo-Seltzer. Sollmann in his "Manual of Pharmacology" (4th edition, 1932), in writing on the use of acetanilid in proprietary headache powders, states that they have "repeatedly produced acute and chronic poisoning" and that their continued use by persons with a predisposition to the drug "has occasionally caused the development of a drug habit, with craving and withdrawal symptoms." Sollmann points out that in chronic acetanilid poisoning there is a destruction of the red blood corpuscles, with blueness of the skin, heart weakness and "progressive mental and physical debility."

Converse Treatment for Epilepsy.—This preparation has been dealt with in THE JOURNAL at various times. The first article appeared April 24, 1915, the second Dec. 2, 1922, and the third Dec. 19, 1931. The first article contained the chemists' report, showing that the Converse Treatment was another one of the bromide mixtures and that a person taking the stuff in accordance with the directions would get an amount of bromide equal to 58 grains of potassium bromide daily. One H. E. Sanderson seems to have been the head of this mail-order quackery. The names of victims or, in the parlance of the medical mail-order faker, the "sucker list," has, in the past at least, been obtained by the Converse concern by writing to the mayors, presidents of city councils and justices of the peace of small towns, as well as to teachers. These people were offered a premium, such as a small dictionary for the names of four epileptics, a fountain pen for the names of three, a cook book for the names of two, or a song book for one.

Hayes Asthma Treatment.—The alleged asthma remedy of P. Harold Hayes of Buffalo, N. Y., was the subject of a brief article in THE JOURNAL of Oct. 2, 1909, giving the results of an analysis made by the Pharmaceutical Institute of the University of Berlin. The treatment is apparently a combination one, consisting mainly in the administration of iodides, together with a cough remedy, some iron and quinine, with, of course, the inevitable laxative. The six drugs used in the treatment were described and reported on as follows: *No. 763.*—Purgative pills, having as the active principle, jalap; *No. 769 A.-C.*—A syrup containing 6.7 per cent of iodine combined as potassium, sodium and ammonium iodides; *No. 781.*—A cough medicine containing about 6.5 per cent of oils of turpentine and peppermint, emulsified and sweetened with syrup; *No. 808.*—Capsules containing about 1½ grains of quinine sulphate; *T. I. Q.*—Potassium iodide, a little wine and a small percentage of hydrochloric acid; *T. II Q.*—A liquid to be taken three times a day and found to contain iron in the form of iron peptonate.

Hunter's Epilepsy Treatment.—This piece of mail-order quackery exploited by LaFayette M. Hunter, M.D., of Little Rock, Ark., under the trade name Dr. Hunter Laboratories, was dealt with at some length in THE JOURNAL June 19, 1926. At that time it was stated that there was associated with Hunter one H. S. Brevoort, M.D. Both Brevoort and Hunter had previously operated quack advertising offices elsewhere. Later, Brevoort's name failed to appear in connection with Hunter's mail-order quackery, but did appear in connection with a testimonial for the Hunter product. Hunter used to emphasize in his advertising that his preparation would stop seizures from the first day that it was used. The Hunter "remedy" came in the form of a white powder in colored capsules. When analyzed in the Chemical Laboratory of the American Medical Association, the stuff was found to be about one-fourth phenobarbital (luminal) and three-fourths milk sugar! Later the Hunter concern seems to have established a subsidiary company known as the Dexo Chemical Company, putting out another alleged remedy for epilepsy under the name "Dexo." This, when analyzed by the A. M. A. Chemical Laboratory, was found to be a bromide mixture.

Lane's Asthma Treatment.—D. J. Lane of St. Marys, Kan., has for some years put out a mail-order "patent medicine" for asthma. The preparation was analyzed some years

ago in the A. M. A. Chemical Laboratory and a brief article appeared in THE JOURNAL May 10, 1919, giving the essential facts. The chemists reported that each dose of Lane's preparation contained approximately 2½ grains of calcium iodide, giving a daily dosage equivalent to 11.3 grains of potassium iodide.

Tums.—This preparation, put out by the A. H. Lewis Medicine Company of St. Louis, was the subject of a brief article in THE JOURNAL May 23, 1931. It was there brought out that analysis indicated that Tums was apparently nothing more marvelous than sugar and chalk flavored with peppermint.

Correspondence

ATTITUDE OF BRITISH MEDICAL ASSOCIATION ON EXTENSION OF SICKNESS INSURANCE

To the Editor:—I must protest against the statement which appears at the beginning of the London Letter in the issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for March 30. The sentence to which I refer is as follows: "In 1930, when this party was in power, the British Medical Association brought forward a scheme for a state medical service for the whole population." I wish to state emphatically that the British Medical Association has never brought forward any such scheme. It is true that we have advised the extension of the present national health insurance system to include, first, the dependents of all the existing insured persons and others of a like economic status; and, secondly, the provision of a consultant service and all necessary specialist and auxiliary forms of diagnosis and treatment, for this defined section of the community; but we have never advocated the inclusion within the ambit of the national health insurance scheme of that section of the population of status above that of the present insured.

The British Medical Association believes that there is a large section of the community which, unaided, is unable to provide for adequate medical attendance and it is for this section that it is considered the national health insurance system should provide; but the association also holds the view that there are many for whom no state provision is necessary as they are well able to provide for themselves.

G. C. ANDERSON, M.D., London.
Medical Secretary, British Medical Association.

MEDICAL LICENSURE

To the Editor:—In table 10 of the extremely valuable statistics of medical licensure presented in THE JOURNAL, April 27, and still more markedly in the map appearing on page 1513, the merit so well deserved by the various state examining boards for their efforts to exclude the more poorly or the unqualified candidates from the practice of medicine seems to be very unfairly assigned to certain states, whose legislatures appear to have done their utmost to make nugatory the endeavors of their own examining boards.

Thus for example this state of Maine, where I reside, is indicated on the map unshaded, indicating that it licenses no osteopaths, no undergraduates, and no graduates of unapproved schools: on the other hand the state of Massachusetts, in company with three others, is shown in black, having in 1934 licensed twenty-one osteopaths and fifty-four other undesirable nondescripts, out of a total of 216 such applicants.

But then it is well within my knowledge that here in Maine a large number of osteopaths and others of that type (chiropractors and so on) are actually carrying on a perfectly legal practice, claiming to be legally qualified to do everything in the way of medicine, surgery and obstetrics permitted to regular practitioners. These men have not been passed on at all by our state medical boards, nor is there in this state any basic sciences board; their actual qualifications are pretty well indicated by Etherington's paper on osteopathy and licensure on page 1549 of the same issue of THE JOURNAL, and doubtless any examination to which they have been submitted is as farcical as are the institutions from which they graduated.

If Massachusetts, represented by its state examining board, is unduly lax, it may perhaps be defended on the ground that "half a loaf is better than no bread." It does at least submit the nondescripts it cannot exclude to some kind of examination, actually rejecting 141 for seventy-five that it passes, some of the 141 doubtless coming to Maine, with possible results such as an Etherington might "shudder to envisage."

So, after all, I would prefer to see a lighter marking for Massachusetts and others, and a black mark for Maine and others in spite of the good intentions of state boards which "gang sae far aglee."

WILLIAM R. TYMMS, M.D., Port Clyde, Maine.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

RENAL OR NORMOGLYCEMIC GLYCOSURIA

To the Editor:—Kindly advise me as to the diagnosis in the case of W. R. C., a white man, aged 24, a graduate engineering student, weighing 156 pounds (70 Kg.). His maternal grandfather is living at 81 but has been diabetic for twenty years; he has never been on insulin but the condition is proved by high blood sugar and he has survived by dieting and a strong will power to resist overeating. One sister, two years younger, as a college student found much sugar in the urine and for the past three years in two hospitals and in private practice has been diagnosed as having a low renal threshold, and possibly potential diabetes; but the blood sugar has never been above normal except in one single hour hospital test, and the accuracy of the test has been questioned. There is no other relevant family history. The patient has always been a heavy eater; he eats but does not crave sweets, and eats three meals. He eats little breakfast, but the evening dinner is more than the other two meals combined. He has eaten much meat and had two glasses of sweet milk at each meal for many months, and before hurrying to school after arising late frequently makes a breakfast of cakes. January 18 he ate one Baby Ruth at 5 p. m. in addition to his regular diet. January 19 at breakfast he ate two egg sandwiches. For lunch he had a large piece of roast beef, French fried potatoes, peas, fried corn, four large biscuits, rice pudding, large servings of all, and two glasses of sweet milk. Three hours after this meal, three tests of the urine were made. The specific gravity was 1.025, and Benedict's test was decidedly green with a yellowish tinge. At 6 o'clock it was still green but lighter. For dinner the patient ate a large steak, French fried potatoes, stewed corn, two hot biscuits and two glasses of milk. Two hours after this the urine was reddish yellow and three hours later pea green with Benedict's test. January 20 the patient arose at 6 a. m. and drank a glass of water. Examination of the urine gave negative results. He drove 58 miles but had no other exertion, and rested for thirty minutes on the bed and a sugar tolerance test was begun with 100 Gm. of dextrose. The fasting sugar was 120 mg. per hundred cubic centimeters. No test of the urine was made. At one-half hour the sugar was 152 mg., with a trace in the urine. At one hour the sugar was 97 mg. No specimen of urine was taken. At two hours the sugar was 81 mg. and the urine was normal. The patient drops off to sleep readily when sitting around, but as a student he may not get enough sleep. He has a voracious appetite and drinks an enormous amount of water, estimated at from three quarts to a gallon a day. No itching, eruption or boils are present but he has drunk a great deal of water for three or four years and nearly always gets up at night to void, sometimes two or three times, but at times sleeps all night without interruption.

M.D., Virginia.

ANSWER.—The diagnosis in this case would seem to be renal or normoglycemic glycosuria. The fasting blood sugar of 120 is a high normal value, but the subsequent blood sugar values are quite normal and the test as a whole should be interpreted as that of renal glycosuria. Supporting this diagnosis is the fact that a sister apparently has a similar condition. The condition of low renal threshold is distinctly hereditary.

The associated voracious appetite and the large amount of water consumption raise the possibility of organic disease of

the diencephalon. Brain tumor should be excluded. The possibility of a previous encephalitis should be considered. Many cases of diabetes insipidus are treated effectively by a procedure described by Francis M. Smith, "Diabetes Insipidus: Treatment by Intranasal Insufflation of Posterior Lobe Pituitary Powder" (THE JOURNAL, March 3, 1934, p. 660).

THROMBOPHLEBITIC EDEMA

To the Editor:—A man, aged 40, was operated on six years ago for hernia and hemorrhoids with an uneventful recovery until he was allowed to go home, which was on the eighteenth day, when phlebitis developed in both legs, which kept him in bed for eighteen weeks. Following this he had no particular pain but had swelling in both legs, more marked around the ankles but extending nearly up to the knees; this was controlled by elastic bandages. In the spring of 1933, besides the existing edema he had indurated painful and tender areas about 2 cm. wide by 6 cm. long, with no apparent superficial reddening in the lower part of both legs (extending about 2 cm. deep). These areas vary in size but have never completely disappeared. In August 1933 two painful small ulcers (1 cm. in size) developed on the anterior surface of the left leg at the level of the junction of the lower and middle third, which eventually healed in about two months with boric acid ointment and sunlight treatment. About six weeks ago apparent thrombosis of some small superficial vessels developed below the left external malleolus. These had the appearance of small, pinheaded elevations. This was accompanied by severe pain and eventually broke down to form a small painful ulcer, which is slowly healing up. The area around this is also very tender and painful, especially while walking. During the day and night he complains of pain in both legs. There are no varicosities of the superficial vessels to be seen. In August 1933, glycosuria was discovered, which was controlled by dieting. The blood sugar three months ago was 115 mg. per hundred cubic centimeters. Other constituents of the blood are normal. The urine otherwise is normal. The blood Wassermann reaction is negative. Because of financial considerations the patient is compelled to continue working (he is a grocery store clerk), which is naturally aggravating his condition. What line of treatment would you advise following without having to put him to bed? Please omit name.

M.D., New York.

ANSWER.—The bilateral thrombophlebitic edema, induration and ulceration of this patient is probably maintained in a subacute or recurring state by some low grade infection. This infection may be found in the usual foci, such as the teeth, tonsils or prostate, but more often in the edematous, indurated tissues themselves, which harbor bacteria readily and respond with acute flare ups following slight trauma, chilling or trivial respiratory infections. Attacks of phlebitis and periphlebitis, if near to the skin, readily break it down and form painful, indolent ulcers, which are often resistant to treatment. After eradication of the infected foci an attempt should be made to put the inflamed tissues at rest. When rest in bed is impracticable, Unna's paste boots are helpful in reducing the swelling and pain. Small doses of x-rays, 100 roentgens three times at ten-day intervals, may be beneficial. As the persistent edema is injurious to the tissues an attempt should be made to reduce it by elevation at night, restriction of fluid and salt intake, and 5 Gm. daily doses of potassium chloride. The treatment of these late cases of thrombophlebitic edema is difficult and sometimes unsuccessful. Better results may be obtained at the onset of the thrombophlebitic edema (de Takáts, Géza: The Management of Acute Thrombophlebitic Edema, THE JOURNAL, Jan. 7, 1933, p. 34).

PTYALISM DURING PREGNANCY

To the Editor:—I desire some information about the treatment of ptyalism during or following pregnancy. A patient, aged 36 years, went through her second pregnancy four years ago. She had considerable nausea during the early months and a very distressing ptyalism during the last five months. The saliva, a clear thin fluid, amounted to from 400 to 600 cc. in a day. This symptom disappeared with the advent of labor. One year ago she had a cold or influenza which lasted about a week, when the ptyalism returned and has lasted ever since. There is no excessive flow of saliva during the day, but in the morning, when she awakes, the mouth and throat are filled with a thin lumpy liquid, which she cannot swallow without vomiting. This disappears when she eats breakfast. The patient leads a normal life, does her own housework, and works a little in a store. She is not nervous, and there is no domestic or other sort of worry. Please omit my name.

M.D., Indiana.

ANSWER.—Ptyalism is a complication of pregnancy that is hard to cure, disappearing usually when quickening occurs but persisting, in rare cases, up till delivery or even two or three months thereafter. It may recur in successive pregnancies.

Ptyalism has also been known to occur during menstruation, it can act vicariously for menstruation, and it has been known to be present in cases of chronic endometritis, myometritis (Tamburini), retroflexio uteri (Schauta), amenorrhea (Simpson) and cancer (De Wees). The causes of salivation, both in pregnancy and outside of pregnancy, have not been determined, the various theories for the cause of toxemia having been invoked, such as reflex, toxic, neurohysterical and endocrinopathic.

In the case referred to the symptoms do not indicate a true ptyalism. Since mercurialization can be eliminated, some disorder of the teeth, gums or sinuses should be sought for. Stomatitis, thrush, parotitis and inflammation of the submaxillary gland (and stone) should be considered. Since De Wees found ptyalism in a case of genital carcinoma and since the sialorrhea can be hormonic, a special study of the ovaries would be in order. Treatment of course must be aimed at the cause if it can be found; otherwise local washes and general measures devoted to improving the health and to curing a possible avitaminosis are recommended.

X-RAY OF LUNGS FOR SILICOSIS

To the Editor:—I would like some information on the technic of taking roentgenograms of the lungs. I have been told that cases of silicosis may be overlooked if taken with a 30 milliampere machine, and that in order to obtain satisfactory plates more milliamperage must be used. Is there anything to this? I should also like to know where to obtain a good book on chest roentgenology, especially one covering silicosis. Please omit name and initials.

M.D., Indiana.

ANSWER.—Chest films made with a 30 milliampere machine are considered entirely satisfactory for the diagnosis of silicosis. Thousands of men are being examined every year with 30 milliampere machines installed in factories, and the results are entirely dependable. Comparison of films made in a tenth of a second with a 100 milliampere broad focus tube, at a distance of 5 feet, with films made in a third of a second with a 30 milliampere tube at the same distance, the other factors being the same, show but little in favor of the faster exposure. The additional details furnished by the smaller focus of the 30 milliampere tube more than compensate for the briefer exposure with the 100 milliampere machine, which must necessarily use the larger focus. At an expense that is altogether out of proportion to any advantage gained, it is possible to use 1,000 milliamperes or even more and to obtain x-ray films in a small fraction of a second. Five hundred milliamperes at a distance of 6 feet will give a beautiful film of the chest in a thirtieth of a second, but, after all, its detail is so little better than that obtained by a 30 milliampere tube in a longer time that it is difficult to find justification for the expense of the more elaborate apparatus unless the work is being done in a large institution specializing in lung diseases. Of course, the more rapid exposures are calculated to minimize the blurring in the vicinity of the lung roots and the descending branches of the lung tree resulting from the pulsations of the heart; but these pulsations disturb fine detail only for a short distance and in the remainder of the lung it would be extremely difficult to overlook silicosis.

Good books and articles on chest roentgenology in silicosis are the following:

Wessler and Jaches: Clinical Roentgenology of Diseases of the Chest; Troy, N. Y., Southworth Publishing Company.

Sante, L. R.: The Chest Roentgenologically Considered, New York, Paul B. Hoeber, Inc., 1930.

Overend, Walker: The Radiography of the Chest, London, William Heinemann Medical Books, Ltd., 1928, two volumes.

All of these have sections relative to silicosis.

Pancoast, H. K., and Pendergrass, E. P.: Pneumoconiosis (Silicosis): A Roentgenological Study, New York, Paul B. Hoeber, Inc., 1926.

The following articles are also valuable for reference:

Pancoast, H. K., and Pendergrass, E. P.: A Review of Pneumoconiosis: Further Roentgenological and Pathological Studies, *Am. J. Roentgenol.* **26:** 556 (Oct.) 1931.

Pancoast, H. K., and Pendergrass, E. P.: Roentgenological Aspects of Pneumoconiosis and Its Medicolegal Importance, *J. Indust. Hyg.* **15:** 117 (May) 1933.

Pancoast, H. K., and Pendergrass, E. P.: Roentgenologic Aspect of Pneumonoconiosis and Its Differential Diagnosis, THE JOURNAL, Aug. 19, 1933, p. 587.

Gardner, L. U.: The Pathologic Reaction in Various Pneumonoconioses, THE JOURNAL, Aug. 19, 1933, p. 594; abstr. *Am. J. Pub. Health* **23:** 1191 (Nov.) 1933.

Gardner, L. U.: Silicosis: Analysis of Factors Involved in Its Production, *Indust. Med.* **2:** 27 (July) 1933.

Gardner, L. U.: Pathology of So-Called "Acute" Silicosis, *Am. J. Pub. Health* **23:** 1240-1249, 1933.

Lanza, A. J.: Etiology of Silicosis, THE JOURNAL, Aug. 19, 1933, p. 583; abstr. *Am. J. Pub. Health* **23:** 1191 (Nov.) 1933.

Sampson, H. L.: The Roentgenogram in So-Called "Acute" Silicosis, *Am. J. Pub. Health* **23:** 1237 (Dec.) 1933.

Russel, A. E.: Clinical and Statistical Aspect of Silicosis, Tr. Nat. Safety Council, 21st Ann. Safety Congress **1:** 57, 1932.

Gardner, Middleton, and Orenstein, Russell, Steuart and others: Records of the International Conference, Johannesburg, Aug. 13-27, 1930.

Bromley, J. F.: Pneumoconiosis: Part I. Silicosis, *Brit. J. Radiol.* **7:** 263 (May) 1934.

Wood, W. B.: Pneumoconiosis: Part II. Pulmonary Asbestosis, *Brit. J. Radiol.* **7:** 277 (May) 1934.

Ellman, Phillip: Pneumoconiosis: Part III. Pulmonary Asbestosis, *Brit. J. Radiol.* **7:** 281 (May) 1934.

HAZARD IN USE OF BRONZE POWDER

To the Editor:—Several girls were put to work in a printing shop gilding the lettering on covers of a catalogue. The gilt is dusted on recently printed letters. The girls are given small occasional jobs of this nature and do it by hand, using cotton dusters. The powder more or less fills the air in the room, which has no particular ventilation excepting the usual doors and windows. Friday and Saturday this work was done. On Saturday afternoon three girls complained of headaches, and at about midnight one called me in, still having the headache, also a raw feeling in the trachea, and a temperature of 101.4 F. Examination demonstrated a considerable coating of gilt powder in the nose, and in one spot a reddened area which looked as if it had been bleeding, though there was no history of this. In the mouth there were three teeth with swollen gums (two central incisors and a left canine) which looked like Vincent's angina, and a blue line along the margin, though this line was not very definite. Lead poisoning of course entered my mind, but not convincingly. She had not worked long in the shop, so type would hardly be accountable. There were no other symptoms pointing to lead, no nervous or abdominal symptoms. Striking was the statement that the stool was "filled with gold." (Her mother said she resembled the goose that laid the golden egg.) Objection to pyorrhea was the statement that the teeth were brushed almost daily, and the other teeth indicated this in their clean condition. Vincent's organisms were not found. I should like to know what the ingredients are of such gilding powders. The one used was made by the IPI, the International Printing Ink Corporation, supposed to be in Chicago, though there was no address on the box. Another powder (brand) was also used to some extent, the name of which was not obtained. Rest, a mouth wash (perborate) and a cathartic cleared up the symptoms entirely, so the patient went to work on Monday. There is, however, some excitement among the employees, and I should like to allay it if possible or take precautionary measures if that is necessary. If there were but one case, I would consider allergy probable. I do not believe there would be lead or mercury. Please omit name.

M.D., Illinois.

ANSWER.—Bronze powders frequently have been suspected of causing occupational diseases but most of the available evidence is to the contrary. In the past more than at present, lead as an impurity in the metals making up these powders has been encountered in quantities theoretically sufficient to induce lead poisoning. Gilding powders are ordinarily made up of copper, zinc and aluminum, more than 75 per cent being copper. Dust arising from exposure to gilding powders might in time produce increased fibrosis of the lungs, but the danger is negligible compared with that from silica and from silicates. The mechanical action of bronze powders may lead to the irritation of the respiratory passages, but the quantity of damage is surprisingly low when considered in connection with the amount of powder sometimes deposited along the mucous membranes.

Some of the various fixing agents used to bind the gilt to the object being gilded are more likely sources of immediate irritation. Various types of sizings or varnishes are used for this purpose. A common one is a linseed oil varnish, which may contain naphtha, solvent naphtha, linseed oil, small amounts of lead and manganese. At times amyl acetate or similar agents enter into these fixatives. The combination of minor chemical irritation from the fixative plus minor mechanical injury from the gilding powder probably account to a full extent for the condition described. Subsequent infection of the respiratory tract undoubtedly played a part. Under ordinary circumstances this type of occupational injury may be regarded as of relatively minor significance. However, if this operation is carried out near printing presses, some consideration should be given to the possibility of irritation from a press cleaning material, which commonly is naphtha, and some printing inks, which sometimes contain vaporable irritating constituents.

ACETYLCHOLINE IN BENZENE POISONING

To the Editor:—The use of acetylcholine for the prevention of death due to the inhalation or absorption of benzol, or benzene, has been discussed in some of the technical journals during the past year or so. It so happened that we are using benzene at some of our operations, and we should like authoritative information regarding the use of this drug, its effects, and results produced to be passed on to the medical men at our plants. If you do have any information available, we shall appreciate your help.

C. L. JONES, Wilmington, Del.
Safety Engineer, Hercules Powder Company.

ANSWER.—Lately several articles have discussed the many types of actions produced by acetylcholine on animals. Among other properties it influences the autonomic nervous system, leads to vasodilatation and a fall in blood pressure, sometimes with a secondary rise, slows the heart rate, and produces hyperglycemia. However, in man similar activities have not developed to an equal extent. Ellis and Weiss state that, after the intravascular injection of acetylcholine in man, apparently this substance is inactivated in the capillaries and loses its capacity to induce changes. They continue: "It is improbable that acetylcholine acts as a general hormone in the human body and unless it acts differently in disorders of the arteriolar system it cannot be considered a useful therapeutic agent." In benzene poisoning two features are (1) the loss from the blood of many of those chemical bodies that provide protection against bacterial action with the result that an excessive proneness to infection exists (infection nearly always is the direct or contributory cause of death), and (2) the presence of a leukotoxin that tends to deprive the body of the presence and functional activity of leukocytes. At the same time there result from an action of the benzene on the bone marrow large numbers of premature red cells in the blood stream, which are possibly of limited functional capacity. It is difficult to believe that acetycholine may eliminate such results of benzene toxicity. Possibly some manifestations of benzene poisoning may favorably be influenced by this choline, but no reason is known why this agent may be regarded as of any remarkable value in "the prevention of death due to inhalation of or absorption of benzene," as noted in the query. Moreover, Kahlson has stated that "acetylcholine has all the properties of a potential poison." Acetylcholine must be considered as still being decidedly in the experimental stage. It has not been recognized by the Council on Pharmacy and Chemistry as acceptable for New and Nonofficial Remedies.

PURPURA AFTER ARSPHENAMINE

To the Editor:—I have a patient with syphilis whom I have been treating with bismuth arsphenamine sulphonate for the last three months. Following the last injection, a few purpuric spots appeared beneath the elbows and he had some bleeding from the gums; otherwise he looks and feels all right. Stokes, in his latest edition on syphilis, mentions the fact that this symptom is a serious precursor of a more violent blood destruction. Now what I want to know is whether I can use any other arsphenamine derivative or should I stop all such treatment and stick to preparations of bismuth and mercury? Stokes mentions the severity but says nothing about treatment of the condition. Please omit name.

M.D., Connecticut.

ANSWER.—It is inadvisable to continue the use of any arsphenamine preparation or derivative, including bismuth arsphenamine sulphonate, after the appearance of purpuric spots and hemorrhage from the gums. The precise significance of these symptoms can be to some extent controlled by an immediate examination of the blood smear for signs of bone marrow irritation and injury.

Stokes discusses in full on pages 478-481 in the latest edition of "Modern Clinical Syphilology" the warnings of injury to the hematopoietic system, giving full details of treatment, including the precise statement "purpura and extensive capillary hemorrhage after an injection of an arsphenamine is a sign of the gravest import, and should be a warning never to repeat this form of treatment" (page 478). Again, on page 480, he says: "The treatment of the hematopoietic group of complications consists first in immediate and probably absolute discontinuance of an arsenical when even traces of purpura have appeared in the patient." The only form of treatment not mentioned by Stokes, since it postdates the publication of the second edition, is the possible use of leukocytic cream as recommended in agranulocytosis by Strumia, for example.

CONTROLLING SIZE OF INFANT—USE OF POTASSIUM NITRATE TO REDUCE LIBIDO

To the Editor:—1. There is a prevalent belief among women that pregnant women need not, and should not, have big babies and that the doctor is to blame if it is over 7½ pounds (3,400 Gm.). That opinion was also stated today over the radio by psychologist Frank Payne. What is the consensus? 2. In a girl's college in New Jersey, nitre is given daily in some foods, ad nauseam to some pupils, the object being, as stated, to "keep down passion." And the statement is made that this drug is given in other colleges for the same purpose. Please inform me whether nitre is of real value for that purpose and if it is safe to continue its use, indiscriminately, year after year.

M.D., New Jersey.

ANSWER.—1. The size of a new-born baby is by no means under the entire control of its mother or of the physician who gives the mother antepartum care. To a moderate extent the size of a baby may be kept down by the mother if she is placed on a restricted diet. However, the size of a baby depends much more on hereditary factors than on diet. Hence a physician cannot be blamed if he delivers a large child unless the baby is monstrously large. If a physician recognizes that for some known (diabetes) or unknown reason a child in utero appears to weigh more than 4,000 Gm. he is justified in inducing labor. However, it would be pernicious practice to induce labor in every case in which a baby appears to be over 3,400 or 3,600 Gm. Furthermore, in many cases it is notoriously difficult to estimate the weight of a child in utero except with

the aid of roentgenograms. Furthermore, unless the roentgenograms are taken under standardized conditions, many errors will be made.

2. Potassium nitrate has practically no effect in reducing passion. Since the drug is used as a diuretic and as a diaphoretic and since it may produce gastro-enteritis, it is obvious that long continued use of it may result in harm. It should certainly not be given indiscriminately to a group of girls even for brief periods. It might be interesting to find out on whose authority the college in question forces girls to take the drug.

PEYRONIE'S DISEASE, OR PLASTIC INDURATION OF PENIS

To the Editor:—Recently, a man, aged 48, consulted me with the complaint that for the past year and a half he has had occasional shooting pains from his left side down into the left side of the penis. The pains have been much less during the past six months, but he has noticed that when he has an erection the organ bends to the left, almost to a 30 degree angle. He has also noticed that the left side seems to be smaller and denser in consistency than the right side. During an erection he experiences considerable pain, and intercourse is almost impossible. The condition is apparently becoming worse, except for the pain, and he of course is desirous of relief. Examination revealed a fibrosis or thickening of the corpus cavernosus on the left side. It has a solid consistency, and one can see how that side would be shorter during an erection. His past history is negative. Cystoscopy did not reveal anything abnormal. The neurologic examination also gave negative results. The Wassermann reaction was negative. Any suggestions as to treatment would be greatly appreciated. Please omit name.

M.D., Wisconsin.

ANSWER.—From the history it is evident that the patient has a so-called Peyronie's disease, sometimes called plastic induration of the penis, or fibrous cavernitis. In view of the fact that the etiology of this condition is unknown, no specific treatment is at hand. On the theory that this may be due to focal infection, careful search for infection of the teeth, tonsils and sinuses should be made; and likewise it is important to massage the prostate and seminal vesicles and to examine the expressed fluid for the presence of pus. If foci of infection are found they should be treated accordingly.

The treatment consists of soaking the organ in hot water two or three times a day, followed by mild massage of the thickened area. It is desirable in some cases to use the official U. S. P. iodine ointment made with a vanishing cream base instead of the U. S. P. base. Administration of potassium iodide, from 0.65 to 1 Gm. three or four times a day, seems to help in some instances. Application of diathermy to the thickened areas occasionally produces great improvement. Roentgen treatment and radium treatment have been advised. Their value is somewhat doubtful.

Surgical treatment offers little in the way of cure and is often followed by a prompt recurrence, often in an aggravated form.

MUCUS SECRETION IN TUBERCULOSIS

To the Editor:—A man, aged 62, has tuberculosis of some twenty-five years standing, always of the subacute variety. Now all signs of active tuberculosis are absent (temperature and pulse are normal, sputum is negative, blood pressure is 120 systolic, 80 diastolic) except an asthmatic condition, which appears to be due to a secretion of thick, tenacious mucus, which he expectorates. At times he coughs up mucous casts of the bronchi. I have tried all the usual expectorants, but they soon lose their effectiveness and when given in large doses they disturb his digestion. I am afraid to give iodides for fear they will cause absorption of the scar tissue in his lungs. He is haunted by a fear that some time he will die of suffocation before medical aid can be obtained. Epinephrine gives temporary relief, but later the condition is aggravated. On several occasions I have resorted to ether inhalations to relieve the spasm of the bronchi and stimulate the secretions. Aside from the distressing condition the patient is in excellent health and attends to his business during the day. Any assistance you can give me will be gratefully received. Please omit name.

M.D., California.

ANSWER.—This condition is one that not infrequently develops in advanced pulmonary tuberculosis when there has been extensive involvement with marked regression. The results of such healing leave several types of pathologic change in its wake. There is a variable degree of bronchiectasis, usually a marked emphysema in the clearing tuberculous tissue and, as the function of the lung diminishes, an active emphysema in the remainder of the lung. There comes a time when there is not enough healthy alveolar surface to aerate the blood, so that a distressing dyspnea sets in, following any type of exertion or when there is otherwise any encroachment on the active alveoli. In this case it may be due to a plugging of bronchi as suggested or to an insidious inflammation that sets in from time to time as a result of infectious agents spilling over into the relatively normal tissue.

To relieve the mucus it seems that most measures have been tried. There need be no fear of trying iodides, in moderate dosage, especially if alternated with other expectorants for intervals of three or four weeks. Sometimes "coramine" will give temporary relief.

The new inflammations that develop can be alleviated only by rest. The time usually comes, however, when the hearts of such patients become inadequate for the load and there results a myocardial weakness that, near the end, is signalized by an ankle edema. Before this comes on, however, the patient's condition may be made more comfortable in the attacks by use of the oxygen tent.

FOURTH LEAD IN ELECTROCARDIOGRAPHIC TRACING

To the Editor:—Will you please outline the accepted method of taking the fourth lead in electrocardiographic tracings, with special reference to the standardization to be employed in taking the fourth lead. Please omit name.

M.D., New York.

ANSWER.—The use of lead 4 is so recent that a uniform technic has not been definitely established. However, the essential principles are now well known. Some of the details can be obtained by reference to the paper by C. C. Wolferth and F. C. Wood in the *American Journal of the Medical Sciences* (**183**:30 [Jan.] 1932) and that by L. N. Katz and Milton Kissin in the *American Heart Journal* (**8**:595 [June] 1933). It has been accepted that the lead from the precordium is more important than the other lead. It is preferable to utilize bony landmarks for the chest lead, since it permits the taking of repeated curves from the same spot. The technic employed by Katz and Kissin is as follows:

With the patient on his back, one of the flexible tin electrodes (2.5 by 5 cm.), made of the same material as the sort used in diathermy, is applied at the level of the fourth interspace, just to the left of the sternum, with the long axis of the electrode parallel to the interspace. To this is attached the right arm terminal of the electrocardiograph. The other tin electrode is placed on the left leg and attached to the left arm terminal. The skin resistance should be kept low. The site of the chest electrode is shaved when necessary and the skin over the region cleansed with alcohol. A warm paste of flour and concentrated salt solution is spread over the electrodes before they are applied to the chest and leg. Adhesive tape is used to keep the electrodes in position. Care is taken to insure close application of the electrodes to the skin. The string tension is adjusted so that 1 millivolt gives a deflection of 1 cm. Care should be taken that the electrodes are polished, that the copper terminals soldered to the electrodes are clean, and that no salt solution gets on the solder.

BURN OF MOUTH

To the Editor:—A boy, aged 4 years, by accident turned the spout end of a hot water kettle into his mouth; as soon as the hot water scalded his mouth he screamed, and some of the water entered his pharynx and no doubt his larynx before he could spit it out. As his mouth and throat were swollen greatly and he had a fever, I treated the mouth with ephedrine sprays and also gave atropine sulphate to lessen the secretions in the mouth. Along with the foregoing, he was treated prophylactically for any pneumonic condition that might develop, which did not show up until the fourth day in the hospital. Since I could not find anything in the literature about such a case, I would appreciate it if you would please let me know if the treatment given was correct and what else could be done in this case and in similar ones. Please omit name.

M.D., Canada.

ANSWER.—The information at hand merely permits one to surmise that the case was one of a burn of the first degree of the tissues of the mouth and pharynx with probable involvement of the larynx. The treatment was, no doubt, quite correct; and probably everything was done to prevent the development of pneumonia, unless the pneumonia developed as a result of aspiration due to abnormal function of the larynx and pharynx. When such conditions in these parts make aspiration into the lungs inevitable, feeding should be carried on extra-orally.

LOCAL ANESTHESIA IN ASTHMA

To the Editor:—What is the safest local anesthetic for nose and throat procedures in allergic asthma? Kindly omit name.

M.D., New York.

ANSWER.—Untoward effects from the use of the usual substances for local anesthesia in allergic asthmatic conditions are seldom observed. Various concentrations of cocaine may be applied to the nasal or sinus mucous membrane. Infiltration of the mucosa or nerve blocking may be carried out with 1 or 2 per cent procaine hydrochloride or similar solutions.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALABAMA: Montgomery, June 24-26. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral (Group A and Group B candidates).* New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Final oral and clinical examination (Group A and Group B candidates).* Atlantic City, N. J., June 10-11. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF PEDIATRICS: Atlantic City, N. J., June 10, and St. Louis, Nov. 19. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

ARIZONA: *Basic Science.* Tucson, June 18. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, July 2. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: San Francisco, July 8-11 and Los Angeles, July 22-25. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, July 2. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: Hartford, July 9-10. *Endorsement.* Hartford, July 23. Sec., Medical Examining Board, Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: June 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, July 8-9. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 17-18. Sec., Dr. William M. Rowlett, P. O. Box 786, Tampa.

GEORGIA: Atlanta and Augusta, June 11-12. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, July 8-11. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

ILLINOIS: Chicago, June 25-28. Address, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 25-27. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, Room 5 State House Annex, Indianapolis.

KANSAS: Topeka, June 18-19. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

MAINE: Augusta, July 2-3. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, June 18-21. Sec., Dr. John T. O'Mara, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 11-12. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, July 9-11. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413 State House, Boston.

MICHIGAN: Ann Arbor, June 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, June 18-20. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June 25-26. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, June 12-14. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, June 24-26 and Sept. 16-18. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Omaha, June 11-12. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, June 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 24-27. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 10-14. Sec., Dr. Benj. J. Lawrence, 503 Professional Bldg.. Raleigh.

NORTH DAKOTA: Grand Forks, July 2-5. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

PENNSYLVANIA: *Written.* Philadelphia and Pittsburgh, July 9-11. *Bedside.* Philadelphia, July 12-13. Dir., Bureau of Professional Licensing, Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, July 2-3. Dir., Department of Public Health, Dr. E. A. McLaughlin, 319 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 25. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 16-17. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre.

TENNESSEE: Knoxville, Memphis and Nashville, June 13-14. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Austin, June 18-20. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

UTAH: Salt Lake City, July 8-10. Dir., Department of Registration, Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, June 26-28. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 19-21. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WASHINGTON: *Basic Science.* Seattle, July 11-12. *Medical.* Seattle, July 15-17. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WEST VIRGINIA: Clarksburg, July 8. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

WISCONSIN: Milwaukee, June 25-28. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse.

Minnesota January Examination

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, Jan. 15-17, 1935. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Forty-one candidates were examined, all of whom passed. One physician was licensed by reciprocity and one by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine		(1934)	90.3
Georgetown University School of Medicine		(1932)	91.2, 93.2
Northwestern University Medical School		(1933)	86.1
Rush Medical College		(1934)	94.2
University of Illinois College of Medicine		(1931) (1933)	83.1, 87.4, (1934) 96.2
State University of Iowa College of Medicine		(1932)	89.3
Tulane University of Louisiana School of Medicine		(1932)	86.1
Harvard University Medical School		(1933)	88.5
University of Minnesota Medical School		(1933) (1934)	89.4, 90.2,* 82.2,* 83, 84.3,* 84.4, 84.4,* 86.3,* 86.5,* 87,* 87.5,* 87.6,* 88.2,* 88.3,* 88.5,* 89.1,* 89.1,* 90.1 *
St. Louis University School of Medicine		(1933)	90.1
Washington University School of Medicine		(1932)	92.1
University of Nebraska College of Medicine		(1933)	84.6, 90.6
Cornell University Medical College		(1932)	89.6
Jefferson Medical College of Philadelphia		(1927)	92.6
University of Pennsylvania School of Medicine		(1933)	86.4
Vanderbilt University School of Medicine		(1932)	89.4
University of Virginia Department of Medicine		(1933)	88.5
University of Manitoba Faculty of Medicine		(1929)	91.2
McGill University Faculty of Medicine		(1933)	84.5
University of Cape Town Faculty of Medicine		(1929)	89.3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Tennessee College of Medicine		(1930)	Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Minnesota Medical School		(1931)	N. B. M. Ex.

* This applicant has received his M.B. degree and will receive his M.D. degree on completion of internship.

Book Notices

The Nervous Patient: A Frontier of Internal Medicine. By Charles Phillips Emerson, M.D., Research Professor of Medicine, Indiana University, Indianapolis. Cloth. Price, $4. Pp. 453. Philadelphia & London: J. B. Lippincott Company, 1935.

On page 279 the author says "This . . . is not a textbook on psychiatry but one on internal medicine. In the former specialty we are quite untrained." In spite of this deficiency, which makes itself known in many places in the book, the present volume supplies a need that has been noted as significant for years. It provides the general practitioner with a volume giving the facts in systematic form of those conditions affecting patients coming to him which lie particularly in the sphere of neurology and psychiatry. There are thirty chapters, of which the first eighteen can be considered to stress organic phenomena while the last part of the book treats of the so-called functional disorders, including disorders of sleep and disorders of the personality. Those chapters concerning actual physical disease contain a great amount of systematic material, little of which deals with the form and function of the nervous system or with psychiatry. Such diseases as neuralgias, allergic pulmonary syndromes and cardiac irregularities are presented in a fashion that differs little from the manner of treatment of these disorders in the conventional medical textbook. Some of these presentations are inferior, a few superior to those found in such books as Osler's and Cecil's. Even in thyroid disease and peptic ulcer, which are now known to have a definite relationship with the patient's mental makeup, this side of the problem is minimized and their treatments are largely presented from the standpoint of conservative medicine rather than from the more modern and, in many cases, apparently the more valuable approach of psychiatry. The physician who is not well grounded in psychiatry might be led dangerously astray in dealing with an occasional case of psychogenic peptic ulcer or even psychogenic cardiac arrhythmia by leaning too much on the present work. The second part of the volume deals chiefly with the superficial aspects of the psychoneuroses. Deep therapy and analysis of these cases is not stressed. Such conditions as impotence and frigidity in women, sources of great mental diffi-

culty yet which are many times brought to the attention of the general practitioner, are sketchily handled. In this part of the book one notes short paragraphs of definitions revealing an insufficient background. The slant given to hysterias and the neuroses is largely that of the English writers on these subjects, but much material is culled from the present journal. In spite of all these deficiencies there is much material in the book to justify recommending it to general practitioners who have wondered just what they were doing when dealing with "nervous" patients. Psychiatrists will feel that a great deal of the material is antiquated and even misleading as, for example, on page 262 the use of the word Banser's for Ganser's syndrome. It might be pointed out in favor of the book that in no other recent volume has the problem of the borderline neuropathic patient been so comprehensively treated. Each topic is closed with a short bibliography and there are occasional case examples in the text.

Bee Venom Therapy: Bee Venom, Its Nature, and Its Effect on Arthritic and Rheumatoid Conditions. By Bodog F. Beck, M.D. Cloth. Price, $5. Pp. 238. New York & London: D. Appleton-Century Company, Inc., 1935.

This book fails in its purpose of advancing the use of bee venom because most of the evidence is uncritical. The use of bees in medicine is traced from the time of Hippocrates to the present day. The author feels that bee stings are not accepted therapy because of the professional attitude toward lay remedies (as in the case of quinine), the seasonal and rural availability of bees (commercial vemon eliminates this factor), and the difficulty of using the procedure. The low incidence of arthritis in bee keepers and the tolerance of patients with arthritis to bee stings are noted. The venom is claimed to be effective through the increased oxidation (circulation) of the affected part. It is recommended in acute rheumatic fever and endocarditis, arthritis deformans, muscular rheumatism, myalgia, neuritis, migraine and many other conditions. It is stated to be contraindicated in tuberculosis, diabetes, gonorrhea and the "endocrine arthritides." The evidence presented is a hodgepodge of quotations from medical literature (principally European), from newspapers, and from testimonials of doctors, patients and bee keepers. The use of venom by applying the live bee to the patient in single and repeated multiple doses is discussed. Fatal cases of bee stings (even among bee keepers), the medicolegal aspects of bee stings, the fact that there is still much work to be done with bee venom, and the inferiority of the present commercial venoms are all noted. There is much elementary discussion of subjects usually relegated to preclinical training; the impression that the author is addressing the general public persists in the mind of the reader. The omission of the author's own case reports results in this being inadequate evidence for the use of bee venom. It is an interesting book from the historical aspect, has an extensive bibliography and is written in good style, but it is not a contribution to scientific medical literature.

Experimental Bacteriology in Its Applications to the Diagnosis, Epidemiology, and Immunology of Infectious Diseases. By Dr. W. Kolle, Director of the Institute for Experimental Therapy and of the Chemicotherapeutical Research Institute "Georg Speyer-Haus," and Dr. H. Hetsch, Professor at the Institute for Experimental Therapy, Frankfort. In two volumes. Translated from the seventh, completely revised German edition by Dagny Erikson. The English version, incorporating further revision, edited by John Eyre, F.R.S., F.Z.S., M.D., Director of the Bacteriological Department, Guy's Hospital. Cloth. Price, $16 per set. Pp. 592; 613, with 318 illustrations. New York: Macmillan Company, 1935.

This book appeared first in the early part of the century. It was based on lectures on bacteriology by the senior author, who was associated with Koch in his investigations of cattle plague in South Africa in 1897. French, Italian, Spanish and Russian versions have appeared, and this is an English translation of the seventh German edition. First come chapters on the morphology and biology of pathogenic micro-organisms, on immunity, on antibodies, on hypersensitivity, on serologic diagnosis and on bacterial and serum therapy. Then begins the study of specific infectious diseases, and the microbiologic details of each "are painted in with firm strokes upon the groundwork of a picture which portrays the clinical aspects of the particular disease. . . . Commencing with a short historical survey, the accepted microbial agent is briefly but adequately described. Then comes a consideration of the possibilities of natural infection of domestic animals, the phenomena of the human infection, its clinical course, and if fatal a description of the postmortem appearances, whilst the necessity for detecting and isolating the microbial cause is insisted upon as the real basis of exact diagnosis. Finally comes the epidemiology of the disease, and, if of epidemic importance, the routes by which it is spread, the characters of the immunity consequent upon recovery from the infection, the methods of prophylaxis and serotherapy of the disease." There is no natural dividing line between the two volumes but, curiously enough, they are treated as separate entities, each with its own pagination, chapter numbers, plate and figure numbers as well as index. This is an awkward arrangement, as the contents of each volume are not indicated either on the title pages or on the backs of the books. The illustrations, especially the many colored plates, are of great value. No really serious fault can be found with the translation. The work may be characterized as an authoritative and comprehensive survey up to the last three years or so of our knowledge of the etiology, specific diagnosis and treatment of infectious diseases and of experimental bacteriology in general, with especial emphasis on "the discoveries, theories and practice of the Koch school." It has great historical interest and should be available for the ready use of teachers and students of bacteriology and infectious diseases.

Kurzwellentherapie: Die medizinische Anwendung elektrischer Höchstfrequenzen. Von Dr. Erwin Schliephake, Privatdozent für innere Medizin an der Universität Jena. Physikalischer Anhang von Dr. L. Rohde. Second edition. Paper. Price, 10 marks. Pp. 196, with 143 illustrations. Jena: Gustav Fischer, 1935.

Three years has elapsed since the appearance of the first edition, during which period short wave radiation has aroused a keen interest in its therapeutic possibilities. That short wave therapy has actually proved superior to diathermy is now the conviction of many authoritative investigators, arrived at after independent, critical study. It was first demonstrated by Schereschewsky in America in 1926, and his labors aroused the intense interest of workers in Austro-German centers, among whom Schliephake, of the research division of the University of Jena, contributed the greatest support and the most original labors.

In the present volume the author has not only collated the opinions of various laborers in the relatively new domain of hertzian short waves but has largely contributed to it both alone and in collaboration with others. This revision of the first edition represents a commendable example of conservative and well balanced discussions on the technical, experimental and clinical phases of the subject. For those technically inclined and familiar with physics, the first section, in connection with the appended chapter by Rhode, offers a clear explanation of the nature of the hertzian waves utilized and a presentation of the physical difficulties that must be overcome to provide the most practical apparatus for short and ultra-short wave radiation. The experimental section occupies the largest part of the volume and introduces an astonishing amount of data on the electrobiologic effects of short waves. This section is so rich in proofs of the biophysical and physicochemical changes produced together with those of their thermopenetrative, physiologic and pathologic actions on cell, animal and human material as to merit the praise of the most critical reader. Schliephake himself, however, stresses that no one should offer dogmatic opinions on the present evidence because the entire problem is very complicated and involves numerous factors, which only time and greater orientation will clear up.

The clinical evidence of the value of short wave therapy is condensed to fifty-four pages, but its discussion is compact and supported by concise case histories, tabulated reports, charts and especially clear roentgenograms. It reveals a large amount of clinical material of the unusual value of short and ultrashort waves in superficial and deep seated infections and inflammatory processes. The serious character of some of the conditions and the spectacular results obtained may create an unjustified skepticism by those best qualified to separate the clinical "wheat from the chaff." The author condemns the present tendency toward improper exploitation by unprincipled manufacturers and misuse by unqualified practitioners. He looks to scientific medicine to control the practice and the development of short wave radiation to insure lasting benefits. While the second edition has been materially revised and the bibliography greatly enlarged, the book still lacks an index, which always enhances the value of scientific contributions.

Some Functions of the Cerebral Cortex. By J. F. Fulton, M.D., Sterling Professor of Physiology, Yale University School of Medicine, Beaumont Lecturer for 1934. Beaumont Foundation Lectures. Reprinted from the Journal of the Michigan State Medical Society, April-May, 1934. Cloth. Pp. 47. Grand Rapids, [n. d.].

This small volume comprises the thirteenth annual Beaumont Foundation Lectures, which were delivered before the Wayne County Medical Society of Detroit in 1934. The lectures concern certain studies of the function of the cerebral cortex in primates. The book is divided into two chapters. The first is further subdivided into eight parts. They are: 1. Discussion of subcortical regulation of visceral functions. Intestinal peristalsis and finally intussusception result from bilateral extirpation of the frontal cortex. 2. Discussion of the cerebral cortex and its association with regulation of visceral activities. 3. Responses of the intestine to stimulation of the frontal lobes and various other parts of the cortex. Peristalsis and finally intussusception were produced experimentally by mild faradic stimulation of the supraprecentral sulcus. When the vagi were cut, no such reaction could be produced. 4. Relation of morbid hunger to lesions of the brain. The author urges further study of the motility of the stomach in traumatic cases of morbid hunger. 5. Vasomotor disturbances associated with cortical lesions and with faradic stimulation of certain cortical areas. 6. Cerebral cortex and vasomotor reflexes. 7. Discussion. 8. Summary. The second chapter also is subdivided into eight parts. Parts 1, 2 and 3 are concerned with the frontal lobes. Part 4 is concerned with the motor area and considers flaccidity, motor power and intellectual deficit. Part 5 is concerned with the premotor area and takes up spasticity and forced grasping, reflex changes, motor power and ipsilateral representation and intellectual deficit. Part 6 describes frontal association areas. Part 7 presents clinical inferences. Part 8 is a summary. This book summarizes the previous work done by others as well as the work conducted by the author in his own laboratory. There is a good bibliography.

Die Liquordiagnostik in Klinik und Praxis. Von Dr. Hans Demme, Chefarzt der neurologischen Abteilung des Allgemeinen Krankenhauses Barmbeck in Hamburg. Paper. Price, 7 marks. Pp. 205, with 96 illustrations. Munich: J. F. Lehmanns Verlag, 1935.

The author states in his preface that he aims to present a practical rather than a theoretical treatise on cerebrospinal fluid. In this he has succeeded. The book discusses the practical aspects of the subject, describing the technic of examination and the cerebrospinal fluid changes in various diseases. Most of the illustrations are devoted to the normomastic reactions in various diseases. This is unfortunate, as the reader is given the impression that the normomastic curve of Kafka is the most important one in the examination of cerebrospinal fluid—even better than the colloidal gold curve—an idea to which few persons acquainted with the subject can subscribe. Demme gives the p_H of cerebrospinal fluid as between 7.35 and 7.8. The upper figure is too high, except when the fluid has been allowed to stand, at which time it may be even higher than 7.8 because of the escape of carbon dioxide from the fluid. In fresh cerebrospinal fluid the p_H varies between 7.4 (rarely 7.35) and 7.6. Although there is nothing new in the book, it is a practical guide to the examination of cerebrospinal fluid.

The Practitioner's Library of Medicine and Surgery. Volume VIII: Therapeutics. Supervising editor: George Blumer, M.A., M.D., David P. Smith Clinical Professor of Medicine, Yale University School of Medicine. Associate editor: Albert J. Sullivan, B.S., M.D., Assistant Professor of Medicine, Yale University School of Medicine. Cloth. Price, $10. Pp. 1031, with 27 illustrations. New York and London: D. Appleton-Century Company, Inc., 1935.

This great system gradually approaches its concluding volume. The present volume deals with the treatment of disease by all the various methods. To this there are a great number of contributors, selected because of special contributions to various phases of modern therapy. Thus, diet therapy is discussed by Dr. George A. Harrop Jr., the technic of medication by Dr. Bernard Fantus, and there are also sections on hydrotherapy, climatotherapy, light and air, inhalation, physical therapy, x-ray and radium therapy, biologic methods of treatment, nonspecific protein therapy, anesthesia and psychotherapy. Following this section of the book comes the remaining three fourths, which is the special therapy of various types of diseases, classified according to their nature and according to the specific sections of the body. The book naturally provides a vast amount of helpful material of a practical character in the treatment of all the various conditions that may come in an ordinary practice. It is the kind of book that ought to be read carefully at least once by its purchaser and then set aside as a constant reference work in the daily problems of practice. Fortunately the book has an extended index, which yields ready reference to the material that it contains. As the authors are most of them well trained physicians with a scientific point of view, the book is remarkably free from recommendations of secret, unestablished and nostrum-like remedies.

Propédeutique obstétricale. Par L. Devraigne, chargé de cours de clinique annexe. Paper. Price, 22 francs. Pp. 191, with 50 illustrations. Paris: Masson & Cie, 1934.

La pratique obstétricale. Par L. Devraigne, chargé de cours de clinique annexe. Paper. Price, 22 francs. Pp. 244, with 39 illustrations. Paris: Masson & Cie, 1935.

These two books are part of a series written for medical students. In the first of the two volumes the author discusses fertilization, the pregnant uterus, the development of the ovum, the clinical examination of a pregnant woman, normal labor, presentation and contracted pelves. In the second volume he takes up the pathology of reproduction, dystocia, puerperal infection, pathology of the new-born and obstetric operations. Readers are informed that, because of the necessity for keeping the size of the books down to a minimum only contemporary French obstetricians are quoted and unusual conditions had to be omitted. While the author successfully adhered to his first intention, he frequently forgot his second plan. The first part of the second book contains discussions of numerous rarities in obstetric practice. The illustrations are few and of poor quality. The second book allots thirty-six pages to the subject of obstetric operations, and one fourth of them are devoted to destructive operations. Of the thirty-nine illustrations in the entire book, eleven depict embryotomy. There are two drawings showing a vaginal cesarean section but not a single one for the classic or the transperitoneal cervical operation. For anesthesia the author prefers chloroform. He says that spinal anesthesia should be reserved for cesarean sections and for the Delmas operation. This advice is unfortunate for two reasons: first, because spinal anesthesia is definitely more hazardous for obstetric patients than for other individuals and, second, because the Delmas method of forcible manual dilation of the cervix should be heartily condemned as pernicious accouchement forcé. These books may serve a useful purpose for French students but there are more satisfactory books in English.

Pseudo-Sciences and Your Three Minds. By John F. Harwood. An Exposé of Astrology, Psychology, Psychiatry, Neurology, Criminology, Hypnotism, Christian Science. Cloth. Pp. 117, with 2 illustrations. New York: The Author, 1934.

It must have required a good deal of courage for this writer to send his small book for review to THE JOURNAL, for even one as deluded as he appears to be should have had enough experience with the press to know that his nonsense would not be looked on with any degree of favor by any scientific group. The thesis seems to be that the author considers himself gifted with a "greater mind," which is more than the usual human "mechanical mind" and human "conscious mind" (his synonyms for the unconscious and conscious minds of everyday psychology). He maintains that psychology, psychiatry, neurology, criminology and hypnotism are fakes and frauds and he links them with astrology and Christian science, with which he has no sympathy either. There is probably no sentence in the book to which the psychiatrist cannot take exception.

Grupo sanguineo dos Indios Guaranys. Por Leonidio Ribeiro, director do Instituto de Identificação, W. Berardinelli e M. Roiter, anthropologistas do Instituto de Identificação, Rio de Janiero. Paper. Pp. 9, with 5 illustrations. Rio de Janeiro: Imprensa Nacional, 1934.

Every one of 107 Guarani Brazilian Indians examined was found to belong to group O. The authors cite Snyder's study on pure American Indians (91.3 per cent group O) and Vela's study on Indians of Equador (95.5 per cent group O), but evidently overlooked the study by Larreta on 200 pure Indians in Peru, all of whom were found to belong to group O (Wiener, A. S.: Blood Groups and Blood Transfusion, Charles C. Thomas, 1935, pp. 156, 166). The authors have also overlooked

the study of Matson and Schrader (*J. Immunol.* **25**:155 [Aug.] 1933), who found that of 115 full-blooded Blackfeet Indians 23.5 per cent belonged to group O and 76.5 per cent to group A. The study by Matson and Schrader is the only exception to the general rule that pure Indians all belong to group O. Thus far these interesting observations in Indians have not been of much help to the anthropologist. It is too bad that the authors did not take advantage of the opportunity they had to examine the bloods of the Guarani Indians not only for the four Landsteiner blood groups but also for the agglutinogens M and N.

A Pathology of the Eye. By Eugene Wolff, M.B., B.S., F.R.C.S., Ophthalmic Surgeon, Royal Northern Hospital. Cloth. Price, 28s. Pp. 283, with 124 illustrations. London: H. K. Lewis & Company, Ltd., Philadelphia: P. Blakiston & Son, 1934.

In his preface the author states that this book "is intended as an introduction to a subject whose essentials most students and ophthalmic surgeons find difficult to come by." Perhaps it fulfils that purpose. The author seems to have dealt rather superficially with the subject. In many instances the pathologic process is described all too briefly and in general terms. Only a small portion of the work will be read with interest by the student of ocular pathology. Too much space is devoted to nonpathologic phases of ophthalmology even though, as the author states in his preface, "much of that which is usually regarded as clinical ophthalmology really belongs to the Pathology of the Living." Too little that is devoted to pathology is devoted to histopathology. Thirty of the illustrations are on normal anatomy and almost all of these are from the author's "Anatomy of the Eye." There is need for a scholarly book, written in English, that will bring the subject of the pathology of the eye down to date. This book does not fill that need.

Report of the Second International Conference on Vitamin Standardisation (London, June 12th to 14th, 1934). League of Nations, Health Organisation. Permanent Commission on Biological Standardisation. Quarterly Bulletin of the Health Organisation of the League of Nations, Vol. III, Extract No. 15. Paper. Pp. 13. Geneva, 1934.

This report is essentially a confirmation, with some revisions, of the recommendations on vitamin standardization made by the first London conference in 1931. While the substances recommended as standards for vitamins A and C have been changed (to β-carotene for vitamin A and cevitamic acid [*l*-ascorbic acid] for vitamin C), the units formerly recommended for these vitamins have been retained and restated in terms of the newly chosen substances. The recommendations for standards and unitages of vitamins B_1 and D remain unchanged. On account of the insufficiency of our present state of knowledge concerning them, the conference has not adopted standards or units for vitamins B_2 (G) and E. The conference recognizes the desirability of expressing potency in terms of the exact amount of pure vitamin present but also recognizes the necessity, for the present, of estimating potency by means of biologic tests in comparison with a standard substance. It is interesting to note that the conference recommends as subsidiary standards for vitamin A and D the standard Reference Cod Liver Oils which have been adopted for the U. S. Pharmacopeia (1934 Revision). For vitamin A, a spectrophotometric test is also outlined. The report of the conference is of great interest to all who are concerned with vitamin standardization.

Diseases of Children. First edition edited by Sir A. E. Garrod, K.C.M.G., D.M., F.R.S., the Late Frederick E. Batten, M.D., M.A., F.R.C.P., and Hugh Thursfield, D.M., M.A., F.R.C.P. Third edition with contributions by 36 authors edited by Hugh Thursfield, D.M., M.A. F.R.C.P., Physician, Hospital for Sick Children, and Donald Paterson, M.D., F.R.C.P., Physician to Out-Patients, Hospital for Sick Children, London. Cloth. Price, $10. Pp. 1152, with 277 illustrations. Baltimore: William Wood & Company, 1934.

This edition has been edited by Hugh Thursfield and Donald Paterson. Numerous changes have been made from the second edition, published in 1929. Archibald Garrod, one of the original editors, has again contributed to the chapter on metabolic disorders. Several entirely new chapters are included, such as those on blood transfusion, diseases of the new-born, rheumatism and tuberculosis. All the chapters have been revised. Numerous new illustrations have been included and newer therapeutic methods have been added. This continues to be the leading textbook on pediatrics by English authors.

Miscellany

THE LOST MANUSCRIPT ON OPHTHALMOLOGY BY THE THIRTEENTH CENTURY SURGEON IBN AN-NAFIS

CASEY A. WOOD, M.D.
PASADENA, CALIF.

During the winter of 1933-1934 I was working in the Vatican Library on various tasks, among them the translation of an Arabic work on the eye and its diseases—the Tadhkirat of 'Alî ibn-'Îsâ, one of the few known complete manuscript copies of which is in the library. At the same time I was having photostat copies made of any other work bearing on early ophthalmic practice not already in the McGill General Medical or the Osler Library.

I was greatly aided in these quests by the invaluable assistance of the curator of Arabic manuscripts, Prof. Giorgio Levi della Vida, formerly of the University of Rome and a widely known oriental scholar. I asked him to make a survey of the manuscripts under his charge and note any titles likely to come under the head of my research.

My ambition to undertake the translation into English, with appropriate illustrations, notes, glossary, index and bibliography of the first systematic codex on the eye and its diseases was in part due to the fact that I had been the translator of the earliest printed textbook on the same subject, the De Oculis of Benevenutus Grassus, Ferrara, 1474 A. D. I had long believed that some competent person ought to undertake the same task for that famous Arabic codex 'Alî ibn-'Îsâ's "Notebook for Oculists," which from the tenth century onward had formed part of the equipment of medieval oriental and European surgeons.

Now, the best known and by far the most erudite of ophthalmic oriental scholars since Hirschberg's death is Dr. Max Meyerhof of Cairo. Moreover, while my knowledge of medieval Latin was quite equal to "Englishing" the De Oculis, my studies of Arabic never reached much beyond the kindergarten stage. Consequently I suggested to Meyerhof that he, with his vastly superior equipment, should undertake the work. He acknowledged the need of a translation but firmly and decidedly declined the task. He passed the arduous undertaking to me with the promise that he would give me every assistance in his power if I would assume the responsibility—ill equipped as I was. While I was considering the matter, two influences turned the scale; a certain teaching body offered to finance the project, and I quite unexpectedly became the possessor, through the friendly aid of Professor Rustum of Beirut, of the only manuscript copy of the Tadhkirat that had been on the market for many years. And so the die was cast; I decided to proceed with 'Alî ibn-'Îsâ.

It may be added here and parenthetically that the great Biblioteca Vaticano possesses, among its many other treasures, over 60,000 more or less complete codices, as well as hundreds of early fragmentary writings in every literary language. These book and manuscript folios are now being indexed and annotated, a large number for the first time, with the aid of yearly grants from Carnegie funds, by a corps of scholars and informed cataloguers. Under these conditions one may expect to run across now and then a unique or hitherto unknown item of unusual value.

Professor della Vida kindly kept my request in mind and in March 1934 discovered, greatly to his and my joy and satisfaction, an unedited codex on eye diseases whose title page and colophon he translated and submitted to me. I recognized at once the importance of the discovery, which I suspected to be an ophthalmic treatise by that famous thirteenth (1210-1288

A. D.) century Arabic author and compiler Ibn an-Nafis. The codex in question had long been placed on the list of lost manuscripts. Although quoted by several medieval writers and on the desiderata of Hirschberg, it had never been seen by any of them. It fortunately happened that Dr. Meyerhof was at the time engaged in translating one of Ibn an-Nafis's numerous works and is, in fact, the greatest living authority on the literary productions of that author. Accordingly I had a photostat made of the Ibn an-Nafis item and mailed to him for further information and report. I had no hesitation in making this request, since Meyerhof and I had both been pupils of that advanced oriental scholar and master of ophthalmic history Julius Hirschberg and had retained with each other the pleasant personal contact made in Berlin forty years before.

My chief purpose in asking Meyerhof to give me his opinion of the status of della Vida's discovery was to determine what effect the contents of the "find" might have on my proposed translation of 'Alî ibn-'Îsâ's monograph. Perhaps it might prove to be a better exposition of medieval ophthalmology and put out of court a translation on which I had already expended considerable time and energy.

Following is the report on our treasure trove by Dr. Meyerhof:

"I was very happy in the receipt of your precious parcel. I passed the whole evening and most of the night in examining it and now send you my preliminary report.

"There is no doubt that it is the 'lost' work of my friend Ibn an Nafis! It bears his style as well as the marks both of his thoroughness and of his prolixity. It is, as I expected, a vast compilation, unhappily without quotation references, but the completest work on ophthalmology ever written by an Arab scholar. . . . I experience some difficulty in translating the Arabic title, which I transliterate as follows: Kitâb al Muhadhdhab fi Tibb al 'Ain. I suggest tentatively, as an English title, 'The Correct Book on Ophthalmology.'[1] While the early ophthalmic treatise of al-Ghafiqi (which I have partly translated and published in French) is more bulky from padding his treatise with an account of every possible subject relating to the eye. Ibn an-Nafis confined himself strictly to such subjects as one finds in a comprehensive but more rational monograph on ophthalmology. . . .

"The MS. is complete; the first original leaf and a few subsequent folios have been replaced by carefully written copies in a more modern hand, but the bulk of the codex is in the calligraphy of the copy and corresponds to 851 A. H. (1447 A. D.), about 160 years after the death of the author. The name of the copyist, himself an oculist, has unfortunately been erased (perhaps intentionally), but the MS. forms, on the whole, an excellent, legible codex.

"The place of the usual introduction is taken by a three-part preface (I hope later to find time to translate this more carefully for publication) which contains several discussions lacking in other works of the kind and time, e. g., a description of the eyes of animals (mostly after Aristotle) and a more extensive account of the variations in size and color of human eyes than is found in any other eye-books of the day.

"Then follows the body of the work, the main part divided in two sections, one theoretical, one practical. Both of these are quite extensive, part I having 81 folios; part II, 107 folios, together with a compilation of all the then known opinions of Greek and Arabic writers on ophthalmology.

"The chapter on the four types of cataract operations is well written but it lacks the touch of personal experience—a defect in most Arabic treatises.

"Finally, there is a long chapter on ophthalmic pharmacology.

"The importance of this compilation of Ibn an-Nafis is so great that I shall suggest to our medical faculty that 1,000 copies of the codex be printed in Cairo at the expense of the university.

"Perhaps in the course of the next two or three years I may find time for a translation into one of the European languages —but that is another story."

1. Literally, "correct after emendations" (Professor della Vida).

Medicolegal

Dental Practice Acts: Rule Prohibiting Advertising by Dentists Declared Unauthorized.—Brown and others, on behalf of themselves and all other licensed dentists in the state of New York similarly situated, sought to restrain the enforcement of rule 8 of the Rules of the Board of Regents respecting advertising by dentists. Rule 8 declared the following form of advertising to be unprofessional and objectionable, and hence a cause for the revocation of a license to practice dentistry:

> The employment of letters, handbills, posters, circulars, cards, stereoptican slides, motion pictures, radio, newspapers or other advertising devices for the purpose of soliciting patronage, except that a dentist may use personal professional cards of a modest type announcing his name, title, address, telephone number and office hours.

The supreme court of New York, special term, Albany County, denied the injunction, and the plaintiffs appealed to the supreme court of New York, appellate division, third department.

The Board of Regents has supervisory powers over the practice of dentistry, and, "conformably to law," may prescribe canons of conduct. The legislature, by chapter 609, sec. 7, Laws of 1933, authorized the revocation of a dentist's license if he, among other things, is "guilty of untrue, fraudulent, misleading or deceptive advertising." The legislature thus set a standard for dental advertising. The rule adopted by the Board of Regents, however, is more restrictive than the statute. The Board of Regents may not make laws and, since the statute permits advertising by dentists which is not "untrue, fraudulent, misleading or deceptive," any rule adopted by the Board of Regents prohibiting advertising that does not come within the ban established by the legislature constitutes the exercise of a law-making power not possessed by the Board of Regents and a power that may not be delegated by the legislature. The supreme court, appellate division, therefore, directed a judgment restraining the defendants from enforcing rule 8.—*Brown v. University of State of New York (N. Y.), 273 N. Y. S. 809.*

Optometry Practice Acts: Sale of Spectacles by Laymen.—The S. S. Kresge Company operated a store in Jersey City, N. J. Among the goods displayed for sale were spectacles, designed to serve as an aid to human vision. An employee, not licensed to practice optometry in New Jersey, sold to a customer a pair of these glasses. It was stipulated that the employee gave no advice, aid or assistance to the customer in the selection of the spectacles. The employee merely sold the spectacles selected by the customer. The New Jersey state board of optometrists instituted this proceeding against the S. S. Kresge Company, charging it with employing and aiding an unauthorized person to practice optometry. The trial court gave judgment for the board, and the company carried the case to the supreme court of New Jersey.

The company contended, among other things, that if the optometry act is construed to bar the right to sell spectacles under the circumstances involved in this case, it would be an unreasonable exercise of the police power. The supreme court was unable to subscribe to this view. The right to practice medicine and kindred professions for the treatment of human ailments is subject to the paramount power of the state to impose such regulations, within constitutional limits, as may be required to protect the people against ignorance and incapacity, as well as against deception and fraud. The state, in the exercise of the police power, may undoubtedly regulate the practice of such professions for the protection of the lives and health of the people. It may prescribe that only persons possessing the requisite qualifications of learning and skill shall practice these professions. A statute prohibiting the sale at retail of "any spectacles, eyeglasses or lenses for the correction of vision, unless a duly licensed physician or duly qualified optometrist . . . be in charge of and personal attendance at the booth, counter or place, where such articles are sold in such store or established place of business," is a valid exercise of police power. *Roschen* v. *Ward*, 279 U. S. 337, 49 Sup. Ct. 336.

But, in the opinion of the court, the sale of the spectacles in the present case does not come within the condemnation of

the New Jersey optometry act. That act declares it to be unlawful if any person, company or association employs or aids or assists any unauthorized person to practice optometry, as defined in the act. The act defines optometry, in part, as follows:

> The practice of optometry is defined to be the employment of objective and/or subjective means for the examination of the human eye for the purpose of ascertaining any departure from the normal, measuring its powers of vision and adapting lenses and/or prisms for the aid thereof.

Oculists and ophthalmologists pursue a calling quite distinct from that of optometrists. The first has relation to the practice of medicine and surgery in the treatment of diseases of the eye, and the second to the measurement of the powers of vision, and the adaptation of lenses for the aid thereof. It is the primary function of the optometrist to employ means to determine the need of lenses for the correction of defects of eyesight, and for the increase of the power and range of vision. The practice of optometry, therefore, does not include the mere sale, without more, of spectacles, glasses or lenses designed to aid human vision. The statutory definition connotes the employment by the practitioner of means, objective or subjective, for the examination of the eye for the purpose of ascertaining its visual power, and the adaptation of lenses or prisms for the correction of discovered defects or deficiencies. The statute was not intended to apply to the sale of spectacles, eyeglasses or lenses as merchandise, or to the mere sale of such to an individual for the use in the correction of his defects or deficiencies of vision, or for the alleviation of the consequences thereof. The power reasonably to regulate the sale of lenses designed to correct vision indubitably resides in the legislature, but it did not choose to exercise it. The judgment of conviction was therefore reversed and the cause remanded.—*New Jersey State Board of Optometrists v. S. S. Kresge Co. (N. J.), 174 A. 353.*

Malpractice: Liability of Railroad Company for Negligence of Its District Surgeon.—The Chicago, Rock Island and Pacific Railway Company contracted with Dr. Runyan, and other physicians associated with him in the operation of St. Luke's Hospital Clinic, to act as "District and Hospital Surgeons" for the railway company in Little Rock, Ark., and vicinity. The railroad agreed to pay the physicians a definite sum monthly and the physicians agreed, among other things, to render necessary surgical and medical attention to passengers injured on the company's trains, to company employees injured in the course of their employment, and to company employees who were contributors to the hospital fund, which the company administered for the benefit of employees who became sick or disabled otherwise than in the course of their employment.

While operating on an employee entitled to benefits from the hospital fund, Runyan removed an enlarged and infected gland from the inguinal region. The gland ruptured during the course of removal and some exudate therefrom splashed in the eye of the plaintiff, a nurse assisting Runyan in the operation. The eye became infected and eventually had to be removed. The plaintiff sued the railway company and Runyan, alleging that Runyan was in the employ of the railroad company and that through his negligence she had been injured. He had been negligent, she alleged, in failing to warn her of the infectious condition of the gland, and in carelessly cutting into the gland and rupturing it without warning her that he intended to do so. After the suit was started, Runyan died. Judgment was rendered against the company and Runyan's estate. The company alone appealed to the Supreme Court of Arkansas.

The jury's verdict, said the Supreme Court, that the operation was negligently performed is conclusive. The operation being negligently performed, the company was liable regardless of whether or not it exercised due care in selecting or retaining the physician. The court held that the contract between the company and Runyan created the relationship of master and servant and the master became liable for the torts committed by the servant in the course of his employment. If a person or corporation, continued the court, makes a contract of employment with another, who accepts the employment and agrees to do the work but is negligent in doing it, the employer is liable.

A strong dissenting opinion, filed by three justices, however, criticized the majority holding. The relation, the dissenting justices stated, of master and servant did not exist between the railroad company and Runyan. In *Arkansas Midland R. Co.* v. *Pearson*, 98 Ark. 399, 135 S. W. 917, the court held that—

> A physician cannot be regarded as an agent or servant in the usual sense of the term, since he is not and necessarily cannot be directed in the diagnosing of diseases and injuries and prescribing treatment therefor, his office being to exercise his best skill and judgment in such matters, without control from those by whom he is called or his fees are paid.

In *Runyan* v. *Goodrum*, 147 Ark. 481, 228 S. W. 397, it was said:

> The relation of master and servant cannot exist between physicians and surgeons who are not x-ray specialists themselves and the x-ray specialist or roentgenologist whom they employ to assist them in the diagnosis and treatment of diseases.

Also in *Norton* v. *Hefner*, 132 Ark. 18, 198 S. W. 97, the court said:

> The doctrine of respondeat superior applies only in case of the negligence of a servant who acts under the direction and control of the master . . . and does not apply to a physician or other professional man, who, when employed, acts upon his own initiative and without direction from others.

In the opinion of the dissenting justices, the railroad company was not liable for Runyan's negligence unless it failed to exercise ordinary care in selecting or retaining him.

However, the judgment against the railroad company was affirmed.—*Chicago, R. I. and P. Ry. Co. v. Britt (Ark.), 74 S. W. (2d) 398.*

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, N. J., June 10-14. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

American Association for the Study and Control of Rheumatic Diseases, Atlantic City, N. J., June 10. Dr. Loring T. Swaim, 372 Marlborough Street, Boston, Secretary.

American Association for the Study of Goiter, Salt Lake City, June 24-26. Dr. W. Blair Mosser, 133 Biddle Street, Kane, Pa., Secretary.

American Association of Industrial Physicians and Surgeons, Philadelphia, June 10-11. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.

American Association of Medical Milk Commissions, Atlantic City, N. J., June 10-11. Dr. Harris Moak, 360 Park Place, Brooklyn, N. Y., Secretary.

American Child Health Association, Iowa City, June 19-22. Dr. Philip Van Ingen, 50 West 50th Street, New York, Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., June 10-11. Dr. Russell S. Boles, 1901 Walnut Street, Philadelphia, Secretary.

American Heart Association, Atlantic City, N. J., June 11. Dr. H. M. Marvin, 50 West 50th Street, New York, Acting Executive Secretary.

American Physiotherapy Association, Atlantic City, N. J., June 11-12. Miss Louise Jetter, 17 East Styles Avenue, Collingswood, N. J., Secretary.

American Proctologic Society, Atlantic City, N. J., June 10-11. Dr. Frank G. Runyeon, 1361 Perkiomen Avenue, Reading, Pa., Secretary.

American Radium Society, Atlantic City, N. J., June 10-11. Dr. Edward H. Skinner, 1103 Grand Avenue, Kansas City, Mo., Secretary.

American Society of Clinical Pathologists, Atlantic City, N. J., June 7-9. Dr. A. S. Giordano, 531 North Main Street, South Bend, Ind., Secretary.

American Urological Association, San Francisco, June 25-28. Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis, Secretary.

Associated Anesthetists of the United States and Canada, Atlantic City, N. J., June 10-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association for Research in Ophthalmology, Atlantic City, N. J., June 11. Dr. Conrad Berens, 35 East 70th Street, New York, Secretary.

Association for the Study of Allergy, Atlantic City, N. J., June 10-11. Dr. Warren T. Vaughan, 808 Professional Building, Richmond, Va., Secretary.

Association for the Study of Internal Secretions, Atlantic City, N. J., June 10-11. Dr. F. M. Pottenger, 1214 Wilshire Boulevard, Los Angeles, Secretary.

Conference of State and Provincial Health Authorities of North America, Atlantic City, N. J., June 14-15. Dr. A. J. Chesley, State Department of Health, St. Paul, Secretary.

Maine Medical Association, York Harbor, June 23-25. Miss Rebekah Gardner, 22 Arsenal Street, Portland, Secretary.

Medical Library Association, Rochester, N. Y., June 17-19. Miss Frances N. A. Whitman, 25 Shattuck Street, Boston, Secretary.

Medical Women's National Association, Atlantic City, N. J., June 9-11. Dr. Alice I. Conklin, 55 East Washington Street, Chicago, Secretary.

Minnesota State Medical Association, Minneapolis, June 24-26. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.

Montana, Medical Association of, Helena, July 2-3. Dr. E. G. Balsam, 208½ North Broadway, Billings, Secretary.

National Tuberculosis Association, Saranac Lake, N. Y., June 24-27. Dr. Charles J. Hatfield, Henry Phipps Institute, Philadelphia, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 27-29. Dr. C. W. Countryman, 407 Riverside Avenue, Spokane, Wash., Secretary.

Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., June 10-11. Dr. W. C. Spain, 116 East 53d Street, New York, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

23: 729-1008 (April) 1935

*Adamantinomas of Hypophyseal Stalk and Sphenoid Bone. H. Zeitlin, Chicago.—p. 729.

Entdifferentiation in Bronchogenic Carcinoma. P. C. Samson, Ann Arbor, Mich.—p. 741.

*Relation of Cell Type to Metastasis in Bronchogenic Carcinoma. P. C. Samson, Ann Arbor, Mich.—p. 754.

*Chemotherapy of Cancer: I. Lead. J. A. Bargen, B. T. Horton and A. E. Osterberg, Rochester, Minn.—p. 762.

Chemical Studies on Tumor Tissue: II. Effect of Protein on Swelling of Normal and Tumor Cells of Mice in Vitro. M. J. Shear, Boston. —p. 771.

Chondrosarcoma: Report of Two Cases. B. Halpert and J. B. Davis, New Haven, Conn.—p. 784.

Congenital Teratoma of Thyroid Gland: Report of Case with Review of Literature. L. C. Pusch and C. M. Nelson, Richmond, Va.—p. 791.

Metastasis of Squamous Cell Carcinoma from Wrist to Axilla Without Demonstrable Intervening Growth: Study by Serial Sections. E. R. Long, Chicago.—p. 797.

Hypophysectomy and Tumor Growth: Supplementary Statement. L. T. Samuels and H. A. Ball, Los Angeles.—p. 801.

Ectodermal Tumors of Skin. C. F. Geschickter and H. P. Koehler, Baltimore.—p. 804.

Adamantinomas of Hypophyseal Stalk and Sphenoid Bone.—Zeitlin reports three cases of adamantinoma. The structures present in the first case were suggestive of enamel formation, consisting of epithelial cell layers, which were arranged similarly to the pattern found in the enamel organ. The outer layer was composed of columnar cells having a characteristic palisade formation corresponding to the ameloblasts or gonoblast cells of the enamel organ. Immediately beneath the gonoblasts were several rows of flattened cells, the axes of which lay at right angles. The innermost layer of cells consisted of star shaped or stellate cells with protoplasmic bridges forming a reticulum. Epithelial pearl formations were present throughout. Toothbud-like projections were seen sprouting from the epithelial cells. Although there were some structures that resembled enamel-forming cells, they showed considerable deviation from the normal. The elongated rod cells seemed to arise from the masses of epithelial cells and not directly from the ameloblasts. From the gross description of the second case, it is evident that the tumor arose from within the body of the sphenoid bone, filled the sphenoid sinus, extended into the posterior part of the roof of the left orbit, left middle ear and right internal jugular vein, and invaded the posterior lobe of the hypophysis, eroding through the dura and giving local metastasis to the infundibulum. This case therefore gives distinct evidences of a malignant character. In these malignant types of adamantinoma the erosions of the sphenoid bone and the infiltration of the dura and the base of the brain are usually conspicuous features. The third case may be considered an intracystic papillary adamantinoma. The character of this tumor was determined by the interlacing epithelial columns lined by a single row of cuboidal cells, the central masses composed of stellate cells with a tendency to form whorls, and the calcareous deposits and numerous cyst formations. Keratohyaline granules were not demonstrable in any of the tumors. The significance of these granules in differentiating the tumors under discussion from epitheliomas of the skin, as emphasized by Erdheim and Jackson, can no longer be maintained. Hair follicles, sebaceous glands and sweat glands, described by Bostroem, Globus, Shapiro and others in epidermoid cysts simulating hypophyseal duct tumors, were likewise absent in these cases. Depending on the stage of formation and differentiation of the oral epithelium, the epithelial cells vary in the formation of the enamel organ. Hypophyseal duct adamantinomas are more common in children and adolescents. The author's first patient was 3 years of age. The clinical picture varies with the location of the tumor and with the age of the patient. The symptoms are largely those of intracranial hypertension, disturbance of hypophyseal function and compression of the neighboring structures. Compression of the optic chiasm is the cause of optic atrophy, defect in the visual fields and visual disturbances. In the 3 year old child there were no marked evidences of pituitary disturbance or pressure on the hypothalamic region except possibly her precocious intelligence. In the second case the scantiness of the pubic hair and the atrophy of the testicles may be significant. The preoperative diagnosis of the tumors of the hypophyseal duct rests largely on the suprasellar calcification, which is often detectable on roentgen examination. It is present in the majority of the cases and, when typically developed, is of great diagnostic significance; in fact, it may be considered pathognomonic.

Metastasis in Bronchogenic Carcinoma.—Samson studied 100 cases of bronchogenic carcinoma in which there were complete necropsies with adequate microscopic control. These were classified as to cell type and 51 per cent were found to be adenocarcinoma, 30 per cent squamous-cell and 19 per cent undifferentiated-cell carcinoma. A comparison of the reported metastases was made in the three groups by the method of coefficients of association, and it was found that each group presented certain general characteristics. The adenocarcinomas showed a strong tendency to involve the central nervous system, adrenals, kidneys, both lungs and to some extent the liver. This is best explained on the basis of predominant hematogenous metastasis, with involvement also of the thoracic and abdominal lymph nodes. The squamous-cell series showed a marked tendency to local extension rather than widespread metastasis, involving the pericardium and bronchial lymph nodes to some extent. In 24 per cent of the squamous-cell carcinomas, no lung metastases were found. Because of the tendency to local extension, this group would appear to offer the best prognosis for radical removal. Judged from the type of organic involvement, the small-cell carcinomas showed little tendency to hematogenous metastasis. The neoplasms in this group showed extensive lymphogenous metastases, however, associated with involvement of the pancreas, liver and spleen. Because of differences in the type and extent of growth and of metastases, knowledge of the cell type and of the degree of differentiation can be of aid to the clinician in determining the most advisable course of treatment. Such knowledge should obviously be used in conjunction with the physical examination, history and roentgen study.

Chemotherapy of Cancer.—Bargen and his associates used colloidal lead phosphate in treating eighty-one cases of inoperable cancer of various organs. To receive benefit from lead it seemed necessary for patients to pass through a stage of lead intoxication; therefore at least 400 mg. of lead in a course was given if the patient's general condition permitted it. In some the immediate reaction was so severe that relatively small amounts could be given. The eighty-one patients received a total of 476 intravenous injections of lead, the average total dose administered being 440 mg. Sixty patients are known to be dead; fourteen are known to be living and have been carefully examined at the clinic and found to be free from carcinoma two or more years after treatment. Of these fourteen, seven had treatment by roentgen rays or radium, or both, in addition to the lead; seven received only lead. The other seven patients have not been examined at the clinic recently; they are known to have had recurrent or metastatic lesions or satisfactory reports could not be obtained by virtue of their inability to return for examination. The observations suggest that providing a suitable vehicle to transfer lead into cancerous tissue by the systemic route and disturbing bodily metabolism by the introduction of a substance that will hinder the growth of cancer are two important approaches to the treatment of cancer. The present methods of administering lead and other allied substances may afford a possibility for future research. For the present, lead seems to have a field of usefulness in conjunction with surgery. When size, extent and the site of a malignant growth make complete removal impossible, the intravenous

injection of lead seems to do something to bodily metabolism that tends toward suppression of the remaining cancer cells. Possibly the same thing would be true if cancers were treated with lead very early. The opportunity for a trial of this has not been afforded. Systemic treatment with lead affords just one additional hope, but, the authors believe, a more important one than has heretofore been thought for the control of cancer.

American J. Digestive Diseases and Nutrition, Chicago

2: 65-138 (April) 1935

Vaccine Therapy in Ulcerative Colitis. S. Lups, Groningen, Holland, translated and edited by A. J. Baker, Grand Rapids, Mich.—p. 65.
Unrecognized "Strokes" and the Gastro-Enterologist. W. C. Alvarez, Rochester, Minn.—p. 90.
Liver Function in Hepatic and Extrahepatic Diseases: I. Results of Clinical Experience with Three Hundred and Twenty-Six Cases. G. K. Wever, T. L. Althausen, G. R. Biskind and W. J. Kerr, San Francisco.—p. 93.
Decompression of Obstructed Biliary System of Cat: I. Morphologic Changes. H. L. Stewart and A. Cantarow, Philadelphia.—p. 101.
Parallel Concentration of Enzymes in Pancreatic Juice. S. G. Baxter, Montreal.—p. 108.
Milk. H. W. Soper, St. Louis.—p. 113.
Dysphagia: Roentgenologically Considered. L. S. Otell and F. O. Coe, Washington, D. C.—p. 117.

American J. Obstetrics and Gynecology, St. Louis

29: 469-618 (April) 1935

Renal Function in Toxemias of Pregnancy. W. J. Dieckmann, Chicago. —p. 472.
Clinical Comparison of Various Ergot Preparations on Postpartum Human Uterus. J. L. Jones and O. W. Barlow, Cleveland.—p. 489.
Harmful Effects of Certain Chemical Substances on Uterus of Rat. F. E. D'Amour and N. Kiven, Denver.—p. 503.
*Hemorrhagic Encephalitis (Neoarsphenamine) in Obstetric Patients. E. D. Plass, Iowa City, and E. B. Woods, Augusta, Ga.—p. 509.
Therapeutic Value of Antuitrin-S in Menometrorrhagia. S. H. Geist and F. Spielman, New York.—p. 518.
Origin of Chorionepitheliomas and of Emboli from Trophoblastic Fragments Enclosed in Myometrium. J. J. Clemmer, Albany, N. Y., and G. H. Hansmann, Washington, D. C.—p. 526.
Analytic Study of Cesarean Sections in Hospital Service of Nine Thousand Deliveries. E. G. Waters and B. Leavitt, Jersey City, N. J.—p. 535.
When to Operate in Ruptured Ectopic Gestation: Analysis of Two Hundred and Forty-Seven Cases. W. C. Meagher, Brooklyn.—p. 541.
*Management of Prolapse of Uterus, with Especial Reference to Manchester-Fothergill Operation. C. A. Gordon, Brooklyn.—p. 547.
*Two Years' Experience with Theelin Treatment of Gonorrheal Vaginitis. J. R. Miller, Hartford, Conn.—p. 553.
Cesarean Section and Its Abuses. H. J. Stander, New York.—p. 559.
*Sterilization of Women by Intra-Uterine Coagulation of Tubal Orifices: Preliminary Report. Lydia Allen De Vilbiss, Miami, Fla.—p. 563.
Abdominal Circulation During Late Pregnancy as Shown in Aortograms. W. E. Coutts, L. Opazo, T. B. Bianchi and O. S. Donoso, Santiago, Chile.—p. 566.
Disproportion at Pelvic Outlet Incident to Forceps Delivery. S. Hanson, Stockton, Calif.—p. 571.
Secondary Purpura Haemorrhagica Complicating Pregnancy. L. S. McGoogan, Omaha.—p. 576.
Pregnancy After Nephrectomy. A. C. Posner, New York.—p. 579.
Sudden Death Due to Pulmonary Embolism in Case of Puerperal Endometritis Associated with Unsuspected Suppuration in Ruptured Symphysis Pubis. I. Daichman, Brooklyn.—p. 582.
Bilateral Ureterovaginal Fistula: Successful Implantation of Both Ureters into Bladder Seven and Eleven Months Following Total Hysterectomy. E. von Graff, Des Moines, Iowa.—p. 585.
Incidence of Puerperal Infection in Patients Delivered in Hospital as Compared to Patients Delivered at Home. M. L. Stout, Baltimore. —p. 588.
Intestinal Obstruction Complicating Pregnancy. P. N. Charbonnet, Tulsa, Okla.—p. 591.
Modifications of Aschheim-Zondek Reactions with Abortion. W. Tate Jr., Chicago.—p. 594.
Purpura Haemorrhagica in Pregnancy. H. W. deSaussure and Eleanor W. Townsend, Charleston, S. C.—p. 597.
Twin Pregnancy with One Living Full Term Child and One Fetus Papyraceus. P. K. Edmunds, Los Angeles.—p. 600.
Suprarenal Cortex Therapy in Pernicious Vomiting of Pregnancy. W. Freeman and J. M. Melick, Worcester, Mass.—p. 602.
Treatment of Pruritus Vulvae with Subcutaneous Alcohol Injections. A. Jacoby, New York.—p. 604.
Full Term Pregnancy Complicated by Ruptured Splenic Aneurysm. H. Sered and L. M. Steiner, Chicago.—p. 606.
Abruptio Placentae Complicating Twin Pregnancy. L. A. Balasquide, Ponce, Puerto Rico.—p. 608.

Hemorrhagic Encephalitis (Neoarsphenamine) in Obstetric Patients.—Plass and Woods discuss the cases of three women, one 19 and two 22 years of age, who died during late pregnancy or shortly after delivery in the course of antisyphilitic therapy directed at latent syphilis detected by routine blood Wassermann tests. In two instances, hemorrhagic encephalitis was demonstrated post mortem, while in the third the clinical picture made the diagnosis reasonably certain. Neoarsphenamine was employed in each case: six injections totaling 2.2 Gm. in the first case and three injections totaling 1 Gm. in each of the other two. In addition, four injections of gray oil (2 minims each) were given to the first patient and one similar dose to the third patient. In each instance the initial dose was within the limit usually recommended and succeeding doses were not large, being smaller than the maximal recommended dose (0.45 Gm.). Injections were made twice a week, instead of once as is commonly advised. In two instances the spinal fluid Wassermann reaction was positive despite the absence of clinical evidence of cerebrospinal syphilis. In each instance, cerebral symptoms of arsenical poisoning developed within seventy-two hours after the final injection of neoarsphenamine, and death occurred within three days of the initial manifestations, or on the third to the fifth day after the last injection. Two patients developed convulsive seizures, which naturally suggested puerperal eclampsia, a condition which must obviously be considered whenever convulsions appear in the latter trimenon of pregnancy or shortly after delivery. In the second case the bizarre character of the convulsions and in the third case the anatomic observations clearly removed this possibility. From a review of the literature, it seems that pregnant women are more susceptible to the deleterious, as well as to the beneficial, effects of antisyphilitic treatment by the modern arsenicals than are other individuals. The clinical picture, as they observed it, was varied and may be confusing, but positive diagnosis can be made by pathologic changes in the central nervous system, more especially by the presence of scattered punctate hemorrhages round the smaller vessels, and usually by an associated edema. Intelligent prophylaxis demands that great care be exercised in giving a first course of antisyphilitic arsenical therapy to a woman with latent syphilis in the latter months of pregnancy.

Management of Prolapse of Uterus.—Gordon points out that it has been clearly shown by many operators that even the worst types of prolapse of the uterus may be cured by vaginal plastic surgery. No abdominal operation then should be done for prolapse. Since the parametrium may be united in the midline without removal of the uterus, why remove it? Hysterectomy should be reserved for those patients in whom the uterus is diseased; removal of the normal uterus for the cure of prolapse is unnecessary, and in young women wrong. The Manchester-Fothergill is all that could be desired, and it should have no mortality. That it does not interfere with parturition may not perhaps be proved, but many women have been successfully and easily delivered after operation. Reviewing his results of seventeen years with this operation, he is satisfied that it accomplishes the most with the least risk.

Treatment of Gonorrheal Vaginitis with Estrogenic Preparations.—Miller has treated sixty-eight cases of gonorrheal vaginitis with estrogenic preparations. With the exception of the first few cases the preparations used have been purchased in the open market. The amount of vulvovaginal irritation, discharge and the intensity of the reaction was estimated as described by Lewis. Many complicating diseases occurred during the treatment of the children. Fresh infections required much longer treatment than did old infections, emphasizing the part that immunity may play. Relapses are frequently due to reinfection from the urethra and will be found more frequently if long-continued follow-up studies are made. The vaginal infection, whether it is due to a gonococcus or other organism, responds equally well to theelin treatment. The author suggests tentatively that the child be cleared as rapidly as possible with daily injections of at least 100 rat units, preferably in divided doses, diminishing the amount as a reaction is obtained, but maintaining a vigorous squamous cell reaction until the gonococcus disappears, and thereafter maintaining over a period of two or three months a moderately well developed reaction. He cannot say that this treatment is harmless, for he does not know what it is doing to the ovaries. So far, at least, deleterious effects have not been manifest. The end results for the forty-two cases of gonorrheal vaginitis that have been observed for six months or longer are given

in terms of negative smears for the time stated; the result apparently had some relationship to the treatment: good results, nineteen; temporary control only (up to the present time), sixteen, and frank failures, due either to insufficiency of dosage or to lack of cooperation, seven.

Sterilization by Intra-Uterine Coagulation of Tubal Orifices.—De Vilbiss began a series of thirty coagulation cases for sterilization in January 1933. In January 1934, twenty patients were reported with tubes blocked, six tubes patent, three with no Rubin test and one not treated. In January 1935, seventeen cases were reported blocked, nine patent, three not tested and one no treatment. Seven patients had become pregnant, three of whom had been reported blocked, one partially blocked and three not tested. Twenty-two are reported nonpregnant, some of whom are using contraceptives. The author concludes that intra-uterine coagulation of the tubal orifices is contraindicated in untreated syphilis because of the liability to hemorrhage. It must also be used cautiously in cases of gonorrhea, since the blocking of tubes may interfere with tubal drainage, although this infection in itself will probably render the woman sterile. The resulting irritation from the coagulation current may also light up an old infection temporarily. Two such cases occurred in the series. The patients suffered pain and elevation of temperature for several days, though without any serious after-effects. There is no positive assurance that the blocking of tubes with the coagulation method will be permanent. The intra-uterine cautery or coagulation method of sterilization may be recommended when surgical intervention is inadvisable or contraindicated.

American Journal of Ophthalmology, St. Louis

18: 307-408 (April) 1935

Intensity of Light in Relation to the Near Point and the Apparent Range of Accommodation. C. E. Ferree and Gertrude Rand, Baltimore.—p. 307.
Fatigue of Convergence Induced by Reading as Function of Illumination Intensity. M. Luckiesh and F. K. Moss, Cleveland.—p. 319.
Use of Sclerosing Solutions in Ophthalmic Therapeutics. M. F. Weymann, Los Angeles.—p. 323.
Temperature Changes in Conjunctiva in Relation to Application of Heat and Cold to Skin. G. H. Gowen, Chicago.—p. 331.
Transient Fluctuations in Scotoma of Glaucoma. J. N. Evans, Brooklyn—p. 333.
Bilateral Absorption of Intra-Ocular Copper with Chalcosis in One Eye: Report of Case. F. C. Cordes and D. O. Harrington, San Francisco. —p. 348.
Photography of Eye with Miniature Camera. R. Castroviejo, New York. —p. 353.
Simple Device for Measuring Stereopsis. M. Davidson, New York. —p. 356.

American Journal of Pathology, Boston

11: 185-372 (March) 1935

*Hemorrhagic Encephalitis. A. B. Baker, Minneapolis.—p. 185.
Distribution of Nuclear Inclusions in Wild Animals. E. V. Cowdry, A. M. Lucas, St. Louis, and H. Fox, Philadelphia.—p. 237.
*Lesions of Coronary Arteries and Their Branches in Rheumatic Fever. L. Gross, M. A. Kugel and E. Z. Epstein, New York.—p. 253.
Endometriosis of Umbilicus. C. V. Weller, Ann Arbor, Mich.—p. 281.
Ectopic Decidual Reaction and Its Significance in Endometriosis. C. V. Weller, Ann Arbor, Mich.—p. 287.
*Diffuse Arteritis of Syphilitic Origin. C. L. Derick and G. M. Hass, Boston.—p. 291.
Congenital Anomaly of the Heart: Report of Case, with Embryologic Discussion. S. K. Ngai, Peiping, China.—p. 309.
Sacrococcygeal Teratoma: Report of Case. R. S. Rosedale, Buffalo. —p. 323.
Interventricular Septal Defect, Dextroposition of Aorta and Dilatation of Pulmonary Artery: Report of Case with Structural Pathogenesis. R. S. Rosedale, Buffalo.—p. 333.
Malignant Hemangioma of Lung with Multiple Metastases. E. M. Hall, Los Angeles.—p. 343.
Antigrowth Effect of Lipoid Fractions of Tissue Extracts. F. A. McJunkin and J. W. Henry, Chicago.—p. 353.
Congenital Megacolon. L. Opper, New Haven, Conn.—p. 365.

Hemorrhagic Encephalitis.—Baker reports twenty cases of a peculiar involvement of the central nervous system (hemorrhagic encephalitis), since clinically the patients present a typical picture of encephalitis, and pathologically the most striking lesion is a hemorrhagic involvement of the brain. Hemorrhagic encephalitis may be characterized clinically as an acute ailment of the central nervous system occurring in previously healthy young persons and manifesting itself by a sudden onset, headache, an abrupt rise of temperature and a rapid loss of consciousness. Convulsions are common, the extremities are spastic and the reflexes are frequently abnormal and variable. Death ensues in from a few hours to several days after the onset of the illness. The most conspicuous feature of this disease is the pathologic picture in the brain. It is chiefly hemorrhagic and predominantly in the white matter. The hemorrhages vary widely in number and size, from extensive extravasations that destroy much brain tissue to tiny perivascular bleedings. In the brains of patients who survive the first few days there are often observed areas of nonhemorrhagic perivascular demyelinization, which are invaded by scavenger cells. Consistent specific changes in the ganglionic cells have not been observed. An occasional blood vessel shows a slight perivascular infiltration of mononuclears. A few widely scattered polymorphonuclears can be detected in the areas of degeneration. Postmortem study shows that all the organs except the brain are normal. Cerebral hemorrhages may frequently be found in other diseases but by careful clinical and pathologic study these can easily be differentiated from true hemorrhagic encephalitis. The brain tissue from one case of hemorrhagic encephalitis has proved virulent to rabbits on intracerebral inoculation. The author accepts hemorrhagic encephalitis as a clinical entity and believes that it is entitled to a definite position in neurologic nosology.

Lesions of Coronary Arteries in Rheumatic Fever.—Gross and his associates discuss the incidence of various progressive, retrogressive and inflammatory processes in the coronary tree as a whole in rheumatic fever. Their studies are confined to the incidence of these phenomena in active rheumatic cases and in normal controls. They describe distinctive vascular lesions found in active as well as inactive cases of rheumatic fever. Their study is based on an examination of 100 hearts, sixty-six of which were from cases of acute rheumatic fever with Aschoff bodies in the myocardium and presenting the evidences of activity. The remaining thirty-four hearts were from inactive cases presenting the typical anatomic evidences of inactive rheumatic fever. Fifty normal hearts, representing age periods from birth to the ninth decade, served as a base line to establish deviations from the normal. The lesions of the coronary artery tree found in active and inactive rheumatic fever are divided into (1) evolutionary changes also found in normal control cases and (2) lesions occurring either uncommonly or never in normal control cases. Many of the vascular diseases falling into the second category are so peculiar and encountered so rarely in other diseases that their presence should lead to a strong suspicion of rheumatic fever in its active stages. The coronary arteries and their branches in the heart show marked damage due to rheumatic fever. This damage is vivid and impressive in the active cases. In the inactive cases the lesions do not appear to be essentially dissimilar from the normally occurring evolutionary age period changes. The observations in the main coronary arteries in the inactive cases are by no means as strikingly clear cut as are those in the active cases. Here, besides the earlier development of intimal hyperplasia (often of a fibrotic type) and medial elastification and scarring, there also occurred in a significant incidence (15 per cent) a variety of arteritides, which are represented by various grades of exudative and necrotizing inflammation and by thrombosis as well as by certain peculiar vascular and intravascular lesions; viz., edema, palisade formation, endarteritis verrucosa and granular thrombotic lesions. Together with these lesions in the main coronary trunks, the smaller vessels distributed throughout the myocardium presented similar changes in nineteen cases. The total incidence of the various types of arteritis occurring in either the main coronary trunks, the smaller myocardial vessels or both, was 33 per cent. There occur in the smaller branches of the coronary arteries many different types of vascular lesions. The variety and wide distribution of these lesions afford additional support to the belief that the heart is the most extensively involved organ in the body in this disease and that the various rheumatic vascular disorders of the heart produce their damage during the active as well as the inactive stages.

Diffuse Arteritis of Syphilitic Origin.—Derick and Hass describe a case of widespread progressive chronic arteritis in a young adult with syphilis. The small arteries were involved

almost exclusively, and all three coats of the vessels were included frequently in the lesion. In most instances the vessels were occluded partially or completely, either by the marked thickening of their walls, by the formation of thrombi or by a combination of the two processes. Infarcts of various organs often were present in regions where the most severe vascular lesions were found. The etiology of the arteritis has not been proved conclusively, but the authors believe that it is the virus of syphilis.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

33: 293-440 (March) 1935

Physical Determination of Radium Dosages. O. Glasser, Cleveland. —p. 293.

Physical Factors in Teleradium Therapy. W. Stenstrom, Minneapolis. —p. 296.

*Physical Factors in Intracavity Radium Therapy. J. L. Weatherwax, Philadelphia.—p. 302.

Physical Factors in Interstitial Radium Therapy. Edith H. Quimby, New York.—p. 306.

Drosophila Eggs in Radium Dosimetry. C. Packard, New York.—p. 317.

Clinical Considerations Influencing Radium Dosage. M. Lenz and J. R. Freid, New York.—p. 319.

Factors Influencing Determination of Radiosensitivity of Cancers of Oral Cavity and Upper Respiratory Tracts. A. P. Stout, New York. —p. 327.

Histologic Structure of Carcinoma of Cervix Uteri and Its Relation to Radiosensitivity. C. C. Norris, Philadelphia.—p. 332.

Value of Roentgen Rays in Diagnosis and Surgical Treatment of Extrapulmonary Intrathoracic Tumors. S. W. Harrington, Rochester, Minn. —p. 340.

Roentgen Diagnosis of Aneurysms of Innominate Artery. C. H. Warfield, Chicago.—p. 350.

Evaluation of Roentgen Findings in Gonorrheal Arthritis. P. J. Kapo, Philadelphia.—p. 359.

*Primary Hemangioma of Third Lumbar Vertebra: Case Report. S. K. Livingston, Hines, Ill.—p. 381.

Pellegrini-Stieda's Disease. L. F. Miller and L. J. Miller, Chicago. —p. 383.

Biologic Effects of Roentgen Rays on Planaria Dorotocephala. F. G. Meserve and Mary J. Kenney, Evanston, Ill.—p. 386.

Dangers of Roentgenoscopy and Methods of Protection Against Them: IV. Detailed Consideration of Doses Received by Fingers of Examiner. E. I. L. Cilley, B. R. Kirklin and E. T. Leddy, Rochester, Minn.—p. 390.

*Roentgen Dermatitis Treated with Fresh Whole Leaf of Aloe Vera. C. E. Collins and C. Collins, Crisfield, Md.—p. 396.

Physical Factors in Intracavity Radium Therapy.—Weatherwax states that the radiologist should plan intracavity treatment of a lesion, keeping in mind (1) the location of the lesion, (2) the distance of the applicator from the surface of the lesion, (3) the filter employed, (4) the size and shape of the applicator and (5) the penetration. Experience has demonstrated that in the treatment of many intracavity lesions it is impossible to deliver a lethal dose throughout the entire lesion with radium alone. The lethal zone produced by radium can be extended by combining roentgen irradiation, and it would seem advisable to have the height of tissue reaction for both radium and roentgen irradiation occur at approximately the same time. Assuming that radiologists have experience in the proper evaluation of the factors pertaining to intracavity irradiation, the greatest advances in the future will be made by obtaining both clinical and experimental evidence in coordinating intracavity and roentgen or teleradium irradiation.

Primary Hemangioma of Third Lumbar Vertebra.—Livingston discusses a primary hemangioma of the third lumbar vertebra in a man 44 years of age. The patient was admitted to the hospital for treatment of osteo-arthritis, complaining of low back pain. When a child the third lumbar vertebra was injured, which necessitated the wearing of a plaster cast for six months, following which there were no symptoms for many years. He played football while in college. In 1921 pain suddenly developed in various joints at intervals. His condition was diagnosed as rheumatoid arthritis, including the spine. In 1932 an acute cystitis appeared suddenly followed by chronic prostatitis. The condition cleared in about two months. Signs and symptoms when present are indistinguishable from those produced by spinal cord tumor; i. e., compression myelitis. On deep palpation and fist percussion there is some tenderness along the lumbar spine, especially the third, and the sacro-iliac joints. About 50 per cent of the limitation of motion in abduction and flexion in the right hip is due to arthritis. Roentgen examination of the lumbar spine shows evidence of a hemangioma of the third vertebral body. This is characterized by a decrease of the total density of the vertebral body and the formation of vertical striations. There was considerable reaction to the first roentgen dose but only a little to the second.

Roentgen Dermatitis Treated with Aloe Vera.—The Collinses report a case of severe roentgen dermatitis treated with fresh whole leaf of aloe vera in a case that had become progressively worse until there was extensive desquamation with oozing of serous fluid. A skin graft was indicated. At the time of examination the patient was furnished with a quantity of aloe vera (fresh whole leaf) for local application, with the hope that this material might serve as a palliative. Twenty-four hours later she reported that the sensation of itching and burning had entirely subsided. She was instructed to continue its use, and when she was seen from time to time during the next five weeks the condition was found to be progressively improved, and after one month there was complete regeneration of the skin of the forehead and scalp, new hair growth, complete restoration of sensation and an absence of scar. There was at this time a slight blanching of the affected area. When last seen the healed area appeared to be completely cured, with no indication whatever of a relapse. The aloe vera leaf contains a large quantity of a light yellowish green material, which is used for local application. The leaf may be split lengthwise or cut into thick cross-sections and the intestine material macerated. While this is still fresh, liberal quantities are applied to the area to be treated and this is covered with a neutral, nonporous substance (such as waxed paper). A bandage or adhesive plaster may then be used to secure the mass in place. An hour or two is the life of an application; it will then be found to be dark and gummy. It is simply washed off carefully with warm water, without soap or medication. The applications may be renewed as often as may be desirable.

Annals of Medical History, New York

7: 99-200 (March) 1935

Robert Koch (1843-1910): An American Tribute: Part I. L. Brown, Saranac Lake, N. Y.—p. 99.

Bidloo and Cowper, Anatomists. F. Beekman, New York.—p. 113.

Thomas Addison and His Discovery of Idiopathic Anemia. E. R. Long, Philadelphia.—p. 130.

Johannes Lange of Heidelberg. R. H. Major, Kansas City, Mo.—p. 133.

Dr. Charles Caldwell (1772-1853). A. H. Barkley, Lexington, Ky.—p. 141.

La Fayette Guild. E. B. Carmichael, University, Ala.—p. 147.

Gerrit Parmelee Judd, M.D., Surgeon and Diplomat of the Sandwich Islands (1828-1873). F. J. Halford, Honolulu, Hawaii.—p. 156.

Stephen Elliott. J. H. Hoch, Charleston, S. C.—p. 164.

Edward Purcell: The First Physician in Minnesota. J. M. Armstrong, St. Paul.—p. 169.

The Blood Letting Controversy in the Nineteenth Century. B. M. Randolph, Charlottesville, Va.—p. 177.

A Short Historical Sketch of Osteomyelitis. J. C. Pickett, Cleveland. —p. 183.

Medicine in the Romance of Petronius. E. T. Sage, Pittsburgh.—p. 192.

Additional Paleopathologic Evidence of Paget's Disease. A. K. Fisher, Milwaukee.—p. 197.

Archives of Ophthalmology, Chicago

13: 523-732 (April) 1935

Present Status of Treatment of Detachment of the Retina. H. Arruga, Barcelona, Spain; translated by S. L. Rhode, Reading, Pa.—p. 523.

Observations on Four Thousand Optic Foramina in Human Skulls of Known Origin. J. E. L. Keyes, Youngstown, Ohio.—p. 538.

Lectures on Motor Anomalies of the Eyes: III. Paralyses of Conjugate Movements of the Eyes. A. Bielschowsky, Breslau, Germany. —p. 569.

Muscle Imbalance in Myopia. F. W. Marlow, Syracuse, N. Y.—p. 584.

*Salzmann's Nodular Corneal Dystrophy: Its Pathologic Process and a Suggested Therapy. E. V. L. Brown and D. Katz, Chicago.—p. 598.

Lipin Interstitial Keratitis. P. Heath, Detroit.—p. 614.

Tuberculous and Streptococcic Retinal Hemorrhages. C. M. Swab, Omaha.—p. 620.

Glioma of Optic Nerve: Report of Case. C. Weskamp, Rosario, Argentine Republic.—p. 630.

Salzmann's Nodular Corneal Dystrophy.—Brown and Katz describe the pathologic process of Salzmann's nodular corneal dystrophy as a noninflammatory, slowly progressive process, early hypertrophic and later degenerative, producing marked and varied alterations of the epithelial layer, Bowman's

membrane and the outer third to half of the corneal stroma. All descriptions of the histopathologic changes present will necessarily be a description of a stage of the disease. It is doubtful whether any two specimens of this condition from two different nodules will ever be secured that will be identical in their histopathologic changes. Salzmann's nodular corneal dystrophy should be treated surgically. The indications are a reduction or threatened reduction of visual acuity. Complete removal of the nodule or nodules holds out the only hope for successful treatment. The nodule or nodules may be removed completely without perforation of the cornea with a small Graefe knife, sharpened to about half its original size. All of the nodule above the surface of the cornea as well as part of the portion that extends into the corneal stroma can be removed readily and safely. To remove the base completely, a trephine is used to cut through the various layers of the pathologically involved corneal stroma. These can then be removed with the Bowman knife and an Elliot scleral disk forceps. The thickness of the removed tissue will depend on the depth at which the cornea is no longer opaque. The trephining is repeated in whatever direction is necessary until the floor of the dystrophic nodule becomes completely transparent.

Archives of Pathology, Chicago

19:465-610 (April) 1935

Ligation of Arteries of Conduction System: Second Attempt to Produce Heart Block in Dogs. E. M. Barton, Chicago.—p. 465.
*Relation Between Basophilic Invasion of Neurohypophysis and Hypertensive Disorders. C. Spark, New York.—p. 473.
High Frequency Electric Fields and Roentgen Rays: Effects on Compensatory Hypertrophy of Kidney. R. B. Allen, New York; C. B. Pratt and C. Sheard, Rochester, Minn.—p. 502.
Infection with Trypanosoma Equiperdum. D. Perla, New York.—p. 505.
*Quantitative Study of Mitochondria in Various Grades of Squamous Cell Carcinoma. Zola K. Cooper and M. G. Seelig, St. Louis.—p. 524.
Cholesterol-Induced Atherosclerosis: Its Prevention in Rabbits by Feeding an Organic Iodine Compound. I. H. Page and W. G. Bernhard, New York.—p. 530.

Basophilic Invasion of Neurohypophysis and Hypertensive Disorders.—Spark compared histologically the pituitary glands from seventy persons with essential hypertension, eleven persons with evidence of antecedent hypertension and 108 with various nonhypertensive diseases. He observed that those from persons with essential hypertension showed no greater degree of basophilic invasion of the pars nervosa than those from nonhypertensive ones when groups of approximately the same ages were compared. The invasion of the posterior lobe by basophils is in some way related to the aging of the organism and possibly to some sex factor as well. The immediate stimulating factors are unknown. There is no morphologic evidence to support the hypothesis that essential hypertension and eclampsia of pregnancy are due to a hyperactivation of the neurohypophysis by basophilic cells.

Study of Mitochondria in Squamous Cell Carcinoma.—Cooper and Seelig point out that no significant differences are apparent in the mitochondria-cytoplasmic ratios of the normal and of the cancerous tissue. Thus, although the phospholipid content of malignant tissue is greater than that of normal tissue, according to Bloor and Bierich, Detzel and Lang, this difference cannot be demonstrated morphologically by any quantitative change in the mitochondria of cancer cells. In fact, the mean mitochondria-cytoplasmic ratio, i. e., the mitochondrial surface per hundred cubic microns of cytoplasm, is somewhat greater for the normal tissue (6.5) than for the cancer tissue (4.75). The mean mitochondria-cytoplasmic ratios for the three grades of squamous cell carcinoma studied are not significantly different. Less difference was found in the mean mitochondria-cytoplasmic ratios for each of the three grades of squamous cell carcinoma than was observed between the ratios for normal and for carcinomatous tissue. In some carcinomas of grade 1 or 2 in which keratinization was marked, almost complete disappearance of the mitochondria was noted. In other grade 1 carcinomas, however, the mitochondria were more numerous than in tumors of grade 3. Consequently, a quantitative estimation of the mitochondria in squamous cell carcinoma does not form any basis for grading.

Archives of Surgery, Chicago

30: 557-730 (April) 1935

Reactions of Contents of Jejunum and Experimental Production of Peptic Ulcer. P. P. T. Wu, Rochester, Minn.—p. 557.
Tuberculosis of Diaphysis: Report of Case. G. E. Bennett and H. A. Jones, Baltimore.—p. 563.
*Histologic Effects of Intravenous Sclerosing Solutions on Subcutaneous Tissues. H. R. Mahorner and A. Ochsner, New Orleans.—p. 573.
*Carcinoma of Body and Tail of Pancreas. H. K. Ransom, Ann Arbor, Mich.—p. 584.
Slipping of Proximal Femoral Epiphysis: Therapeutic Results in One Hundred and One Cases. M. M. Pomeranz and Marian Frauenthal Sloane, New York.—p. 607.
Rate of Absorption of Alveolar Gases in Relation to Hyperventilation. K. E. Lemmer and E. A. Rovenstine, Madison, Wis.—p. 625.
*Postoperative Prognosis in Cancer of the Breast: Results After from Seven to Twenty Years in a Series of Cases Studied with Reference to Rapidity of Preoperative Growth. E. M. Stanton, Schenectady, N. Y.—p. 629.
Bronchobiliary Fistula. R. W. French, Fall River, Mass.—p. 635.
Changes of Bones in Leukemias. L. F. Craver and M. M. Copeland, New York.—p. 639.
Median Cleft of Lower Lip and Mandible, Cleft Sternum and Absence of Basihyoid: Report of Case. C. B. Morton and H. E. Jordan, University, Va.—p. 647.
Congenital Absence of Sacrum. W. R. Hamsa, Iowa City.—p. 657.
Effect of Pneumothorax and Oleothorax on Histologic Structure of Thyroid Gland. A. C. Abbott, A. M. Goodwin, Sara Meltzer and E. Stephenson, Winnipeg, Manit.—p. 667.
Primary Sarcoma of the Duodenum: Report of Case. D. Prey, J. M. Foster Jr. and W. Dennis, Denver.—p. 675.
*Experimental Pulmonary Embolism Associated with Venoclysis. M. J. Rumold, Kansas City, Kan.—p. 685.
Differentiation of Benign and Malignant Gastric Ulcers: Unreliability of Diagnostic Criteria. A. B. Rivers and T. J. Dry, Rochester, Minn.—p. 702.
Fifty-Sixth Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts, J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland.—p. 716.

Effects of Sclerosing Solutions on Subcutaneous Tissues.—Mahorner and Ochsner injected 2 cc. of the following sclerosing solutions subcutaneously at different points into dogs: 5 per cent sodium morrhuate, 5 and 3 per cent sodium gynocardate, 5 per cent sodium hydnocarpate, quinine and ethyl carbamate, 40 per cent sodium salicylate, 75 per cent invert sugar and equal parts of 50 per cent dextrose and 30 per cent sodium chloride. The areas into which the injections were made were removed after one hour, twelve hours, twenty-four hours, four days and ten days. They found that the solutions produced necrosis of the subcutaneous tissue with a zone of inflammatory reaction surrounding it, liquefaction necrosis and subsequently fibrosis—in other words, a sterile abscess, which resulted in ulceration only twice. Since destruction of endothelium is essential in the intravenous injection of sclerosing solutions for the treatment of varicose veins, the property of injuring cells locally is desirable provided the systemic effect is not untoward. A 5 and 3 per cent solution of sodium gynocardate, one of 5 per cent sodium morrhuate and one of 40 per cent sodium salicylate seemed to produce more complete necrosis of tissues than did the other solutions tested. This is in similar ratio to their thrombus-producing effectiveness as tested by intravenous injection. A 40 per cent solution of sodium salicylate is not advocated for clinical use.

Carcinoma of Pancreas.—Ransom compiles the records of sixteen cases of carcinoma of the body or tail of the pancreas observed during a period of eight and a half years. In every case the diagnosis was verified by operation or necropsy. Microscopic confirmation of the diagnosis was obtained whenever biopsy specimens could be taken. During this period fifty-eight cases of carcinoma of the head of the pancreas were seen. The youngest patient was 40 years old and the oldest patient was 69 years; the average age was 57 years. Operation was performed on all the patients except the two who died, in whom the diagnosis was confirmed by necropsy. There were no deaths at operation. Of the fourteen patients operated on, six were discharged from the hospital unimproved, seven completely or partially relieved from pain and one definitely worse. In the group of patients who were relieved from pain there seemed to be no relation to the type of operation, and the improvement following simple exploratory laparotomy in some cases was as great as that following some of the more complicated procedures. Of the eight cases in which operation was performed and in which the time of death was ascertained, the average duration

of life following operation was four and five-tenths months. The average duration of symptoms prior to admission was five and seven-tenths months. In the patients who died without operation the duration of symptoms was eight months and one month, respectively.

Prognosis in Cancer of the Breast.—Stanton states that the prognosis in cancer of the breast is by no means hopeless. In favorable cases, postoperative survival without demonstrable recurrence for more than twenty years is by no means uncommon. The woman who is fortunate enough to have a thorough operation performed for a slowly metastasizing tumor before glandular involvement has taken place stands an excellent chance of never having a recurrence or of living for many years without a demonstrable recurrence. Surgery has little to offer the woman with a rapidly metastasizing tumor. In the case of the slow-growing, less malignant tumor, even though operation is performed relatively late, the postoperative survival is liable to be prolonged in keeping with the course of the progress indicated previous to the operation.

Experimental Pulmonary Embolism Associated with Venoclysis.—According to Rumold, a foreign body, such as a cannula, lodged in the vein of a dog produces an inflammatory reaction throughout the wall of the vein with partial occlusion of the lumen by an organizing fragile thrombus. All the necessary factors for thrombosis are present. There was no difference in the reactions caused by the various types of commonly used cannulas. The results of the experiments indicate that a foreign body in a vein is more active in the production of thrombi than is the infused solution. The animals used in the experiment lost weight while receiving a 10 per cent solution of dextrose given in the same quantity per body weight as it is given clinically to man. All dogs showed a high incidence of pulmonary infarction and thrombosis after having received venoclysis. The pulmonary infarcts were usually associated with other pulmonary pathologic changes, such as pneumonia and edema. Well formed clots were injected into the external jugular veins of dogs having apparently normal lungs. At necropsy, pulmonary thrombi were found but no pulmonary infarcts. The experiments show that pulmonary complications, such as bronchopneumonia and edema, predispose to pulmonary infarction when thrombi are circulating in the pulmonary vessels. By analogy it seems probable that pulmonary embolism and thrombosis are not infrequently associated with continuous venoclysis as used in man, although they may not always be recognizable clinically. Continuous intravenous infusions are not without danger.

Bulletin of Neurol. Inst. of New York, New York

4: 1-220 (March) 1935

The Sense of Smell: Introduction. C. A. Elsberg, New York.—p. 1.
Id.: I. New and Simple Method of Quantitative Olfactometry. C. A. Elsberg and I. Levy, New York.—p. 5.
Id.: II. New Principle for Classification of Odors Based on Their Olfactory Coefficients. C. A. Elsberg, I. Levy and E. D. Brewer, New York.—p. 20.
Id: III. Relation Between Olfactory Coefficients and Boiling Points of Odorous Substances. C. A. Elsberg, E. D. Brewer and I. Levy, New York.—p. 26.
Id.: IV. Concerning Conditions Which May Temporarily Alter Normal Olfactory Acuity. C. A. Elsberg, E. D. Brewer and I. Levy, New York.—p. 31.
Relation Between Chronic Anterior Poliomyelitis or Progressive Spinal Muscular Atrophy and an Antecedent Attack of Acute Anterior Poliomyelitis. L. A. Salmon, Brooklyn, and H. A. Riley, New York.—p. 35.
*Cerebrospinal Fluid Obtained by Lumbar and by Ventricular Puncture in Tumors of the Brain. C. C. Hare, New York.—p. 64.
Demonstration of Normal Cerebral Structures by Means of Encephalography: V. Ventricles, Interventricular Foramina and Aqueduct of Sylvius. L. M. Davidoff and C. G. Dyke, New York.—p. 91.
Nerve Supply of Ventricular Ependyma. E. M. Deery, New York.—p. 133.
Pathology of Cerebral Angiomas: Study of Nine Cases. A. Wolf and S. Brock, New York.—p. 144.
Hereditary Progressive Neuropathic (Peroneal) Muscular Atrophy: Report of Family with Unusual Manifestations. S. E. Soltz, New York.—p. 177.
Hypertrophic Arthritis of Cervical Vertebrae with Thenar Muscular Atrophy Occurring in Three Sisters. E. G. Zabriskie, C. C. Hare and R. J. Masselink, New York.—p. 207.

Cerebrospinal Fluid in Tumors of Brain.—Hare studied the composition of the cerebrospinal fluid in 218 cases of verified tumor of the brain. The study of the fluid was of little value in the differential diagnosis of tumors from other diseases of the brain. An increase of protein and of globulin in the fluid obtained by lumbar puncture occurred in 61 per cent of meningiomas, 64.8 per cent of multiform glioblastomas and 100 per cent of acoustic neuromas and other tumors in the lateral recess of the posterior cranial fossa, and in 35.4 per cent of supratentorial astrocytomas, 60 per cent of supratentorial and 20 per cent of subtentorial medulloblastomas; in other pathologic types of intracranial tumor an increase of protein and globulin occurred in some cases but not in others. Increases were not found in the oligodendrogliomas, dermoid cysts or papillomas of the choroid plexus. Changes in the protein and globulin of fluid removed by ventricular puncture are more infrequent, but in supratentorial growths in one cerebral hemisphere the fluid removed from the lateral ventricle of that side will often contain more protein and globulin than that from the other ventricle. In infiltrating growths, increase of protein and globulin in the lumbar fluid is more frequent in the glioblastomas and astrocytomas when the tumor is entirely subcortical. The largest increase of protein and globulin in the lumbar fluid was found in the multiform glioblastomas and in acoustic nerve tumors, and in the ventricular fluid in the multiform glioblastomas. The increase of protein in the lumbar fluid varied between 50 and 490 mg., and of globulin between 1+ and 4+. The lumbar manometric pressure was normal in sixty-nine cases. There was a pleocytosis of more than 10 cells per cubic millimeter in 8.6 per cent of the lumbar fluids. When a brain tumor is suspected, an increase of protein and globulin in the fluid obtained by lumbar puncture is of some value for the diagnosis of the pathologic nature of the growth. In the more differentiated gliomas, changes in the fluid are more unusual. The examination of the fluid may be of aid in the differentiation between intracerebellar and extracerebellar growths and between supratentorial infiltrating tumors that are entirely subcortical and those that involve the cortex as well.

Florida Medical Association Journal, Jacksonville

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Suggestions as to Care of Brain Injury Cases. R. N. Greene, Jacksonville.—p. 387.
Causalgia or Thermalgia. R. F. Godard, Quincy.—p. 389.
The Dengue Epidemic in Miami. G. N. MacDonell, Miami.—p. 392.
Dengue in Florida, 1934, and Its Significance. T. H. D. Griffitts, Jacksonville.—p. 395.

Journal of Bacteriology, Baltimore

29: 333-436 (April) 1935

Products from Fermentation of Glucose and Arabinose by Butyric Acid Anaerobes. A. F. Langlykke, W. H. Peterson and Elizabeth McCoy, Madison, Wis.—p. 333.
Studies on Escherichia-Aerobacter Intermediates: I. Cultural Characteristics. R. P. Tittsler and L. A. Sandholzer, Rochester, N. Y.—p. 349.
Fermentation of Alpha-Methylglucoside by Bacteria. R. P. Tittsler and L. A. Sandholzer, Rochester, N. Y.—p. 363.
Relationship of Soil Protozoa to Tubercle Bacilli. C. Rhines, New Brunswick, N. J.—p. 369.
Studies on Cultural Requirements of Bacteria: IV. Quantitative Estimation of Bacterial Growth. J. H. Mueller, Boston.—p. 383.
Further Observations on Certain Variants of Bacillus Megatherium. G. Knaysi, Ithaca, N. Y.—p. 389.
Evidence on Specificity of Hexosidases: Comparison of Activity of Escherichia Coli and Escherichia Communior. Margaret Hotchkiss, New York.—p. 391.
Behavior of Virus of Equine Encephalomyelitis on Chorio-Allantoic Membrane of Developing Chick. Elizabeth Higbie and Beatrice Howitt, San Francisco.—p. 399.
*Note on Susceptibility of Ferrets to Virus of Common Cold. W. C. Noble Jr. and D. H. Brainard, New York.—p. 407.
Studies on Respiratory Mechanism of Streptococci. M. A. Farrell, New Haven, Conn.—p. 411.

Susceptibility of Ferrets to Virus of Common Cold.—Noble and Brainard injected filtrates from forty persons with colds into twelve ferrets; of these animals eight were used only once and four were used twice, the inoculation with a second virus being given only when the first had failed to infect, and after a rest period of from seven weeks to three months. Four of the twelve ferrets developed symptoms consisting of elevation of temperature, increased nasal secretion, and in one or two instances lacrimation and lethargy. In the temperature curve, an initial elevation appeared in from twenty-four to seventy-two hours and lasted from twenty-four to forty-eight

hours; this was followed by a depression, which lasted from twenty-four to seventy-two hours. The normal temperature seldom exceeded 102.5 F. The maximal elevation following inoculation was 104.1 F., which lasted for two days. Rhinorrhea of mild character appeared in from twenty-four to seventy-two hours and lasted about four days; the secretion was mucoid, never mucopurulent, and was sometimes sufficient to wet the hair about the nostrils. On the third or fourth day the animals were sometimes drowsy and difficult to arouse. An attempt was made to transmit the infection from ferret to ferret and from ferret to human being. The human subject, who had repeatedly handled the ferrets and had been exposed to their respiratory secretions when they sneezed or coughed on being inoculated, had never reacted to them. The second ferret in the series showed no symptoms, but the human subject, who was not isolated after inoculation, developed nasal obstruction and slight rhinorrhea in eight hours. These symptoms were mild and lasted about thirty-six hours.

Journal of Biological Chemistry, Baltimore

108: 607-808 (March) 1935. Partial Index

Relation of Lipid Composition to Physiologic Activity in Ovaries of Pregnant and Pseudopregnant Rabbits. E. M. Boyd, Rochester, N. Y. —p. 607.

Chemical Method for Estimating Epinephrine in Blood. J. C. Whitehorn, Waverley, Mass.—p. 633.

Stool Volatile Fatty Acids: IV. Influence of Feeding Bran Pentosan and Fiber to Man. W. H. Olmsted, G. Curtis and O. K. Timm, St. Louis.—p. 645.

Biochemical Method for Determining Indigestible Residue (Crude Fiber) in Feces: Lignin, Cellulose and Non-Water-Soluble Hemicelluloses. R. D. Williams and W. H. Olmsted, St. Louis.—p. 653.

Presence of Creatinine in Blood. J. M. Hayman Jr., S. M. Johnston and J. A. Bender, Cleveland.—p. 675.

Studies on Vitamin B_2 (G): Nonidentity of Vitamin B_2 and Flavins. C. A. Elvehjem and C. J. Koehn Jr., Madison, Wis.—p. 709.

Sequence and Extent of Tissue Changes Resulting from Moderate Doses of Viosterol and Parathyroid Extract. Agnes Fay Morgan and Zdenka Samisch, Berkeley, Calif.—p. 741.

Provitamin D Potencies, Absorption Spectrums and Chemical Properties of Heat-Treated Cholesterol. Milicent L. Hathaway and F. C. Koch, Chicago.—p. 773.

Journal of Pharmacology & Exper. Therap., Baltimore

53: 385-486 (April) 1935

Effect of Caffeine, Coffee and Decaffeinated Coffee on Blood Pressure, Pulse Rate and Simple Reaction Time of Men of Various Ages. Kathryn Horst and W. L. Jenkins, Ann Arbor, Mich.—p. 385.

*Acetanilid Poisoning: Clinical and Experimental Study. S. Payne, Durham, N. C.—p. 401.

Comparison of Effects of Potassium Iodide and of Diiodotyrosin on Basal Metabolism. W. J. Siebert and C. S. Linton, St. Louis.—p. 418.

Studies of Morphine, Codeine and Their Derivatives: VIII. Monoacetylmorphine and Diacetylmorphine and Their Hydrogenated Derivatives. N. B. Eddy and H. A. Howes, Ann Arbor, Mich.—p. 430.

Narcotic Potency of Some Cyclic Acetals. P. K. Knoefel, San Francisco. —p. 440.

Effects of Papaverine Hydrochloride and Dihydromorphinone Hydrochloride (Dilaudid) on Nonanesthetized Dog's Intestine Subjected to Different Internal Pressures. C. M. Gruber and J. T. Brundage, Philadelphia.—p. 445.

Action of Local Anesthetics on Respiratory Apparatus. E. F. Hill and A. D. MacDonald, Manchester, England.—p. 454.

Effect of Caffeine and Theobromine on Digitalis Toxicity: Experimental Study. H. B. Haag and J. D. Woodley, Richmond, Va.—p. 465.

Acetanilid Poisoning.—Payne studied the records of several patients poisoned by proprietary preparations containing acetanilid. In most cases poisoning was insidious and followed years of addiction. Abrupt withdrawal of the drug was usually followed by three or four days of restlessness and excitement. Acetanilid appeared to be habit forming. A small amount of acetanilid (0.3 Gm.) would have a completely quieting effect on a patient quite manic following abrupt withdrawal of his pet nostrum, an effect that could not be duplicated with barbital or morphine. Cyanosis was observed in all cases, disappearing or fading rapidly to the more persistent gray discoloration on withdrawal of the drug. Tachycardia was frequent, but there was no evidence of heart disease except in one case, in which symptoms disappeared after gradual withdrawal of the drug. A wide variation in red blood cell counts was noted and an attempt made to correlate cyanosis, dyspnea and weakness with anemia. Although anemia was often associated with weakness, many cases showing extreme cyanosis, dyspnea and weakness presented normal or increased red blood cell counts. Since in every case the toxic symptoms of acetanilid poisoning were partly obscured or further complicated by the bromides contained in the "patent medicine" used, the author experimented with dogs (two), restricting the intoxication to acetanilid alone. The first effect of these experiments after daily acetanilid ingestion was an anemia. Following prolonged administration, the animals gained tolerance. After ingestion of acetanilid there was a transient methemoglobinemia and increase in blood phenol. During methemoglobinemia, oxygen capacity falls and symptoms of anoxemia may result. No cardiac damage was demonstrable by electrocardiograms.

Kansas Medical Society Journal, Topeka

36: 89-132 (March) 1935

Backache: Symptom. P. B. Magnuson, Chicago.—p. 89.

Pituitary and Ovarian Hormones in Gynecologic Conditions. C. MacBryde, St. Louis.—p. 91.

Diaphragmatic Hernia, with Especial Reference to Esophageal Hiatus Hernia. H. N. Tihen, Wichita.—p. 95.

Breast Tumors. B. A. Nelson, Manhattan.—p. 101.

Psychoses Associated with Pregnancy, Their Etiology and Their Prevention. R. R. Wilson, Kansas City, Mo.—p. 104.

36: 133-176 (April) 1935

*Diseases of Peripheral Arteries. E. V. Allen, Rochester, Minn.—p. 133.

Hodgkin's Disease Presenting the Pel Ebstein Type of Remittent Fever with Chills and Generalized Pruritus. R. R. Melton, Halstead.—p. 140.

Chronic Lipoid Nephrosis. R. H. Major, Kansas City, Mo.—p. 144.

Treatment of Burns. M. E. Pusitz, Topeka.—p. 148.

Diseases of Peripheral Arteries.—Allen discusses Raynaud's disease, erythromelalgia, thrombo-angiitis obliterans and arteriovenous fistula as diseases of the peripheral arteries. The color of the extremities is of little diagnostic value and, when too much stress is placed on this single manifestation, errors in diagnosis result. Thus vasomotor changes simulating Raynaud's disease may be a symptom of thrombo-angiitis obliterans, and the excessive redness of the extremity in the dependent position in thrombo-angiitis obliterans and arteriosclerosis obliterans may be erroneously attributed to erythromelalgia. Mechanical methods are likewise of little value in diagnosis. Such procedures serve their best function in physiologic studies and records of vascular disease, and as such they are worthy of great respect; careful examination of the patient and of his symptoms, however, is adequate for diagnosis in all but a small proportion of cases. Careful examination of patients with suspected disease of the peripheral blood vessels is an absolute necessity. This consists of careful palpation of the dorsalis pedis, posterior tibial, popliteal, femoral, radial and ulnar arteries for pulsations, determination of the effect of posture on the color of the extremities, a search for inflamed or thrombosed superficial veins and for varices, an estimation of the temperature of the parts and a notation of atrophy, minor trophic changes or frank gangrene.

Laryngoscope, St. Louis

45: 163-242 (March) 1935

Carcinoma of Larynx: Some Conclusions Derived from Personal Experience. J. C. Beck and M. R. Guttman, Chicago.—p. 163.

Id.: Surgical Considerations. S. Salinger, Chicago.—p. 174.

Submucous Resection of Nasal Septum: Notes. H. L. Berman, New Haven, Conn.—p. 184.

Correction of Recent and Old Fractures of Nose. G. H. Cox, Glen Cove, N. Y.—p. 188.

Some Improvements in Sinus Diagnosis. L. W. Oaks, H. G. Merrill and L. E. Oaks, Provo, Utah.—p. 198.

Mucoceles of Frontal Sinus. J. A. Cavanaugh, Chicago.—p. 205.

Gradenigo Syndrome and Suppuration of Cerebral Ventricles as Complications of Acute Suppurative Otitis Media: Report of Case with Autopsy Findings. E. K. Mitchell and A. Silverstein, Philadelphia.—p. 214.

Staphylococcus Albus Septicemia Secondary to Mastoiditis and Sinus Thrombosis: Operation and Recovery: Report of Case. G. D. Wolf, New York.—p. 227.

Diathermy in Treatment of Chronic Deafness: New Technic. D. M. Yazujian, Trenton, N. J.—p. 230.

Maine Medical Journal, Portland

26: 45-60 (April) 1935

Will America Copy Germany's Mistakes? Results of Half a Century's Practice of Social Insurance in the Land of Its Inception. G. Hartz. —p. 51.

Spontaneous Meningeal Hemorrhage. J. O. Piper, Waterville.—p. 55.

Medical Annals of District of Columbia, Washington

4: 63-92 (March) 1935

Medical Management of Urinary Lithiasis. C. C. Higgins, Cleveland.—p. 63.
Rapid Diagnosis and Serum Treatment of Lobar Pneumonia. H. F. Dowling, Washington.—p. 66.
Problems in Management of Deafness. V. R. Alfaro, Washington.—p. 70.
Pages of Spanish Medicine. F. H. Garrison, Baltimore.—p. 73.
Industrial Medicine and Medical Ethics: Work of the Medical Department of the Chesapeake and Potomac Telephone Company. W. C. Moore, Washington.—p. 77.

Missouri State Medical Assn. Journal, St. Louis

32: 125-168 (April) 1935

New Electrode for Conization of Cervix. R. J. Crossen, St. Louis.—p. 125.
Municipal Program for Control of Tuberculosis. H. I. Spector, St. Louis.—p. 128.
Acute Sacro-Iliac Strain. D. D. Stofer, Kansas City.—p. 133.
*Compression Fractures of Spine: Simple Method of Treatment. F. A. Jostes, St. Louis.—p. 136.
Recent Cardiovascular Therapy. J. C. Lyter, St. Louis.—p. 138.
Dilaudid Addiction: Report of Case. J. N. Wakeman, Springfield.—p. 141.
Advantages of Local Anesthesia in Gynecology and Obstetrics. G. Gellhorn, St. Louis.—p. 143.
Atypical Thyroid Disorders. O. P. J. Falk, St. Louis.—p. 146.
Tuberculosis of Axilla and Vulva. R. Hanks, Fulton.—p. 148.
Site of Action of Drugs on Oculo-Autonomic System. C. Beisbarth, St. Louis.—p. 151.

Compression Fractures of Spine.—Jostes submits a method for treating compression fractures of the spine in which after the diagnosis has been made the patient is placed on a hospital bed with an automatic knee elevator. The head of the patient is placed at the foot of the bed, bringing the site of the fracture over the knee rest, which is elevated until the spine at the site of the fracture is hyperextended sufficiently to bring about reduction. This can be done in from twelve hours to four days. At intervals, lateral views of the spine are taken without disturbing the position of the patient. The film caset is forced firmly over the prominence of the knee elevator, thus depressing the mattress sufficiently to permit a true lateral view of the spine on the plate. If complete "decompression" of the vertebral body has been accomplished, the patient can be left in the position on the bed until the fracture has healed or placed in a hyperextension plaster jacket for a period of twelve weeks. No weight bearing is permitted. A hyperextended celluloid jacket is worn for a period of another three to five months. During the latter period the patient is up and about.

New England Journal of Medicine, Boston

212: 597-646 (April 4) 1935

Traumatic Diaphragmatic Hernia Following War Injuries. P. E. Truesdale, Fall River, Mass., and W. G. Phippen, Salem, Mass.—p. 597.
Psychogenic Origin of Organic Diseases. E. Moschcowitz, New York.—p. 603.
Hyperpyrexia at the Boston Psychopathic Hospital. S. H. Epstein, Boston.—p. 611.
Pasteurization and the Courts. J. A. Tobey, New York.—p. 613.

New Orleans Medical and Surgical Journal

87: 653-736 (April) 1935

Stanford Emerson Chaille as a Student Viewed Him. J. M. Mason, Birmingham, Ala.—p. 653.
Light and Its Application to Irradiation of Foods. H. T. Scott, Madison, Wis.—p. 660.
Recent Advances in Treatment of Heterophoria and Squint. C. A. Bahn, New Orleans.—p. 667.
*Glaucoma, Nutritional Edema: Preliminary Report. H. Schroeder, New Orleans.—p. 671.
Carcinoma of the Breast, and What Is Before Us. O. H. Beck, Greenville, Miss.—p. 678.
Consideration of Microscopic Appearance in Prognosis and Treatment of Carcinoma. E. H. Lawson, New Orleans.—p. 682.
Recognition and Prevention of Epithelioma. M. T. Van Studdiford, New Orleans.—p. 684.
Cancer: Brief Résumé of Methods of Palliative Surgical Treatment. A. H. Storck, New Orleans.—p. 686.
Importance of History Taking and Complete Examination. A. B. Harvey, Tylertown, Miss.—p. 688.
The Ketogenic Diet. O. W. Bethea, New Orleans.—p. 691.

Glaucoma.—Schroeder explains all the different stages of glaucoma on the basis of nutritional edema, except that in inflammatory glaucoma an infection is superimposed. The active stage of acute glaucoma he considers an angioneurotic edema of the eye. Schamberg recommends calcium lactate and desiccated adrenal in the treatment of angioneurotic edema; Lagrange and Gouterman use similar treatment in glaucoma. In the etiology of glaucoma as a nutritional edema he considers protein deficiency due to faulty diet, faulty assimilation, the anemias (primary and secondary) due to infection, nutritional disturbances or hemorrhage (frank and occult) and possibly vitamin B deficiency as an accessory factor.

New York State Journal of Medicine, New York

35: 337-468 (April 15) 1935

Contemporary Views of Angina Pectoris and of Coronary Thrombosis. L. F. Barker, Baltimore.—p. 408.
Peritonitis. C. G. Heyd, New York.—p. 416.
Newer Methods of Treating Peptic Ulcer, Constipation and Indigestion. G. Crile, Cleveland.—p. 422.
The Psychiatric Point of View. B. Glueck, Ossining-on-Hudson.—p. 429.
Bronchography and Bronchiectasis. I. S. Schapiro and L. Jaches, New York.—p. 441.
Progress in Diagnosis and Treatment of Pernicious Anemia. E. G. Allen, Syracuse.—p. 448.
Foreign Body in the Heart: Report of Case with Retention of Large Needle with Recovery. G. L. Fair, Oyster Bay.—p. 453.

Oklahoma State Medical Assn. Journal, McAlester

28: 117-156 (April) 1935

*Combined Artificial Pneumothorax and Phrenicectomy for Closure of Diffusely Adherent Tuberculous Cavities. D. W. Gillick, Shawnee.—p. 117.
Heliotherapy and Pulmonary Tuberculosis. W. D. Rosborough, Talihina.—p. 124.
Chronic Hydrocephalus Following Amputation of Meningocele: Observations Twelve Years After Operation. L. Stone, Topeka, Kan.—p. 133.
What the Public Thinks of Doctors. S. H. Babcock, Holdenville.—p. 138.

Combined Artificial Pneumothorax and Phrenicectomy for Closure of Diffusely Adherent Tuberculous Cavities.—Gillick states that cavities of the upper lobe diffusely adherent to the chest wall are noncompressible under pneumothorax treatment alone. Cavities attached to the parietal pleura by fixed string and band adhesions can be compressed by pneumothorax combined with phrenicectomy. The explanation of the combined treatment is based on the fact that retraction of the compressed upper lobe toward a fixed point is influenced by the tendency and tension of the lobe toward the root and the contraction capacity of the stretched adhesion. While the diaphragm remains active, tension toward the root dominates and the upper lobe, suspended before two fixed points, continues to retract toward the hilus. The cavity is pulled from the attachment to the adhesion, and the enlargement of the cavity and tearing of the treated lung may take place. Phrenicectomy is indicated as soon as such enlargement becomes appreciable. Following the paralysis of the diaphragm, the tendency of the lung to retract toward the root or the hilus gradually diminishes. The contraction capacity of the stretched adhesions commences to prevail and the upper lobe begins to retract toward its attachment to the adhesion. The raising of the paralyzed diaphragm seems to play no part in the obliteration of the cavity because cavities seem to close in the same manner, whether the diaphragm is raised, lowered or remains unchanged. This has been noted particularly in cavitations of the left side, which seem to close equally well, although the left diaphragm seldom rises to a high level. It would appear that several months are required for relaxation of the lung and closure of the cavity after a phrenicectomy, in contrast to the rapid closure obtained by cauterizing the holding adhesions by means of intrapleural pneumolysis. It is assumed, of course, that the adhesions are accessible for cauterization, although roentgen evidence often fails to provide positive proof. The continuance of the closure of the cavity must be brought about by the maintenance of the proper pressure by refilling.

Philippine Islands Med. Association Journal, Manila

15: 115-176 (March) 1935

Clinical Observations with Reference to Leprosy in Children of Lepers. C. B. Lara and B. de Vera, Culion.—p. 115.
Reduction of Postnatal Birth Weight Loss of the New-Born. Honoria Acosta-Sison and J. S. Galang, Manila.—p. 130.
Further Observations on Case of Complete Separation of Symphysis Pubis During Labor. R. R. Llamas, Manila.—p. 132.
Medical Service in Rural Towns of the Philippines: I. Distribution of Physicians. H. Lara, Manila.—p. 143.

South Carolina Medical Assn. Journal, Greenville

31: 43-68 (March) 1935

Importance and Ease of Prescribing Diets. L. P. Barnes, Bennettsville.—p. 49.

Anemia in Infants and Young Children. C. W. Bailey, Spartanburg.—p. 54.

Southern Medical Journal, Birmingham, Ala.

28: 289-394 (April) 1935

Relief of Pains of Locomotor System by Local Injections of Iodized Oil with Control by X-Rays. J. Forestier, Paris and Aix-les-Bains, France.—p. 289.

Fractures of the Spine: Report of Three Hundred and One Cases, with Especial Reference to Treatment and End Results. C. W. Stallard, Montgomery, W. Va.—p. 295.

Diagnosis of Diverticulitis and Diverticulosis of the Colon, with Especial Reference to Roentgen Study of These Conditions. C. P. Rutledge, Shreveport, La.—p. 303.

Anterior Pituitary Dwarfism: Further Report of Cases Treated with Growth Hormone. H. H. Turner, Oklahoma City.—p. 309.

*Hemolytic Icterus with Infantilism. W. Langston, Oklahoma City.—p. 316.

Decompression of Femoral Vessels Together with Kondoleon Operation for Congenital Elephantiasis in a Child: Report of Case. B. M. Bernheim, Baltimore.—p. 320.

Lipoid Pneumonia in Children. H. F. Garrison, Jackson, Miss.—p. 322.

Pansinusectomy. W. A. Wagner, New Orleans.—p. 324.

*Technic of Bronchial Lavage: Demonstration with Patient. M. M. Minter, San Antonio, Texas.—p. 328.

Treatment of Trigeminal Neuralgia, with Especial Reference to Alcohol Injection. C. W. Flynn, Dallas, Texas.—p. 330.

Therapeutic Value of Strong Epinephrine Solutions. E. C. Ellett, Memphis, Tenn.—p. 336.

Some Aspects of Asthma Problem. C. M. Miller, Richmond, Va.—p. 338.

Allergic Purpura. C. H. Eyermann, St. Louis.—p. 341.

Some Phases of Conduct of Labor. J. L. Baer, Chicago.—p. 345.

Innervation of Muscles of Abdomen with Reference to Surgical Incisions. C. S. White, Washington, D. C.—p. 349.

Reconstructive Surgery of Common Bile Duct. G. Coors, Memphis, Tenn.—p. 351.

Value of Presacral Sympathectomy in Gynecology. P. Graffagnino, New Orleans.—p. 353.

Some Clinical Examples of Indirect Suicide. K. A. Menninger, Topeka, Kan.—p. 356.

Hyperthyroidism Complicated by Heart Disease. M. B. Whitten and G. D. Mahon Jr., Dallas, Texas.—p. 360.

Undulant Fever. S. C. Fulmer, Little Rock, Ark.—p. 367.

Chronic Ulcerative Colitis. L. A. Riely, Oklahoma City.—p. 370.

New Treatment for Recalcitrant Pustular Acne: Preliminary Report. A. W. Sohrweide, New York.—p. 376.

Newer Management of the Diphtheria Carrier. I. S. Barksdale, N. Ethel Turner and R. L. Bates, Greenville, S. C.—p. 378.

The Teaching of Hygiene in Medical Schools. R. R. Spencer, Washington, D. C.—p. 381.

Hemolytic Icterus with Infantilism.—Langston cites a case of hemolytic ictero-anemia associated with skeletal and genital infantilism. As far as can be determined from the history, the onset of the two conditions was simultaneous. Hence a causal relationship of the ictero-anemia to the infantilism is suggested. The hemolytic ictero-anemia was relieved by splenectomy, with characteristic response. Following recovery from the operation, hormone therapy (growth and sex) was instituted. Twenty-seven months later, normal height (for his family) and normal genital development had been attained. The increase in height in this period of time was 6½ inches (16 cm.). Roentgen studies suggest that closure of the epiphyses is progressing slowly, if at all, and further increase in height may be expected. This young man's general health is now excellent, and he is able to carry on the work of a normal person.

Technic of Bronchial Lavage.—Minter used the following procedure for bronchial lavage in a severe case of bronchiectasis. The method differs from that used by Stitt and is safe and simple. The patient is seated in a chair and inclined toward the side desired for lavage. The head is held back and the tongue pulled forward. The tip of a number 12 French catheter is placed on the base of the tongue and held in position by the patient. While the patient breathes normally, the hypertonic solution of sodium chloride of Bledsoe-Fisher is introduced by gravity through a 20 cc. Luer syringe. An amount of solution sufficient to fill the dilated bronchi and cavities, but less than enough to interfere with respiration, is injected. This amount is determined by trial and varies from as little as 30 cc. to as much as 400 cc. After the proper amount of fluid has been injected, the patient sits quietly to permit the retained pus to float out of the cavities. The pus and the solution are then expelled by postural drainage and the procedure is repeated until the washings are clear. Then 100 cc. of a 1:2,000 aqueous solution of sodium ethylmercurithioralicylete (merthiolate) is injected and permitted to remain in the lung for five minutes. It is then drained and 5 cc. of endolysin is injected, to remain. The amount of solution used, the number of washings necessary and the frequency of lavage vary with the size of the cavities, the amount of secretion and the condition of the patient.

United States Naval Med. Bulletin, Washington, D. C.

33: 169-312 (April) 1935

Efficacy of Typhoid Prophylaxis in the United States Navy. S. S. Cook.—p. 169.

Modified Stokes Stretcher. W. L. Mann.—p. 177.

*Gonococcic and Meningococcic Endocarditis: Report of Three Cases. C. W. Ross and F. C. Greaves.—p. 179.

Ivy Poisoning (Rhus Dermatitis). W. R. Manlove Jr.—p. 183.

Comparative Study of Measurement of Speed of Adjustment of Eye for Near and Far Vision. C. J. Robertson.—p. 187.

Resuscitation of Stopped Heart by Intracardial Therapy: IV. Further Use of Artificial Pacemaker. A. S. Hyman.—p. 205.

Illumination for Dental Operations. H. E. Harvey and C. V. Rault.—p. 214.

Studies of Active Pneumococcus Immunity: III. Duration of Type I Pneumococcus Immunity. D. Ferguson.—p. 219.

Encephalography: Report of Cases. P. T. Crosby.—p. 225.

Recent Progress in Electrically Produced Gamma Radiation. A. Soiland.—p. 235.

Treatment of Obesity with Dinitrophenol. R. J. Leutsker.—p. 238.

Treatment of Furuncles and Carbuncles. W. H. Whitmore.—p. 243.

Industrial Medicine: Part II. H. L. Shinn.—p. 250.

Gonococcic and Meningococcic Endocarditis.—Ross and Greaves cite three cases of bacterial endocarditis in two of which it was proved that the gonococcus was the causative agent. Swartz's medium, modified by omitting the agar, was used in obtaining the blood cultures. For inoculation, 15 cc. of blood was used, care being taken to have the medium at body temperature when the blood was introduced. Twenty-four hours later there was a scanty growth of gram-negative diplococci. The growth increased during the next twenty-four hours, after which it rapidly died out. All attempts to obtain subcultures failed. In the third case the meningococcus was not definitely shown to be the cause of this endocarditis, but there is rather strong presumptive evidence that it was. There was a fairly definite history of rheumatic fever in childhood. Meningococcic bacteremia may exist for weeks or months before meningeal signs appear. Before the appearance of the meningeal signs in this patient, he had a daily temperature of 100 F. with a cardiac disability that was gradually increasing in severity. As soon as the specific therapy was begun, the temperature became normal and the cardiac condition became stationary and then slowly improved as compensation occurred. It is reasonable to assume that the antimeningococcus serum exerted a specific action on any meningococci localized in the endocardium, halted the progress of the endocardial lesion and permitted recovery within the limits of the damaged heart to compensate.

West Virginia Medical Journal, Charleston

31: 145-192 (April) 1935

Ocular Tuberculosis. M. L. Dillon, Charleston.—p. 145.

Symptomatology and Diagnosis of Upper Urinary Tract Lesions. A. E. Goldstein, Baltimore.—p. 158.

Backache. R. L. Anderson, Charleston.—p. 165.

Experiences in Surgery of Lateral Sinus and Internal Jugular Vein. M. F. McCarthy, Cincinnati.—p. 171.

Prognosis in Nasal Surgery. I. Fawcett, Wheeling.—p. 177.

Wisconsin Medical Journal, Madison

34: 221-292 (April) 1935

Clinical Expressions of Marrow Insufficiency. W. S. Middleton and O. O. Meyer, Madison.—p. 231.

End Results in Surgical Treatment of Cancer. J. F. Smith, Wausau.—p. 234.

Roentgen Diagnosis of Small Carcinomas of Stomach. L. G. Rigler, Minneapolis.—p. 236.

Diagnosis and Treatment of Common Precancerous Lesions of Skin. H. J. Farrell, Milwaukee.—p. 241.

Perforated Ulcer. J. Dean, Madison.—p. 251.

Mold Allergy: Its Importance in Asthma and Hay Fever. S. M. Feinberg, Chicago.—p. 254.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

9: 223-242 (April) 1935

Diet in Middle Age. J. D. Comrie.—p. 224.
Rheumatism in Middle Age. M. B. Ray.—p. 226.
Diseases and Disabilities of the Eye Which Occur in Middle Age. F. A. Williamson-Noble.—p. 230.
Dental Diseases of Middle Age. F. Talbot.—p. 232.
Prevention and Treatment of Heart Disease in Middle Age. T. East.—p. 234.
Treatment of Chronic Bronchitis and Asthma in Middle Aged Persons. J. B. Alexander.—p. 236.

British Journal of Urology, London

7: 1-102 (March) 1935

Perineal Drainage for Certain Bladder Operations. G. Illyés.—p. 1.
*Hexamine as a Urinary Antiseptic: I. Its Rate of Hydrolysis at Different Hydrogen Ion Concentrations: II. Its Antiseptic Power Against Various Bacteria in Urine. R. St. A. Heathcote.—p. 9.
Prostatic Electroresection. M. Baillie.—p. 33.

Methenamine as a Urinary Antiseptic.—Heathcote determined the effect of exposure at 37 C. for periods of three and six hours of Staphylococcus aureus, Bacillus coli-communis and Bacillus coli-alcaligenes to a 1:500 solution of methenamine at p_H 5, 6 and 7. At p_H 7 no definite effect on the growth of any of these organisms could be observed, even after six hours. At p_H 6 an exposure of three hours produced no effect in the case of Staphylococcus aureus, a doubtful effect with B. coli-communis and a considerable effect in the case of B. coli-alcaligenes. An exposure of six hours produced a doubtful effect in the case of Staphylococcus aureus but a well marked action on the others. At p_H 5 the growth of Staphylococcus aureus was definitely reduced by six but only doubtfully by an exposure of three hours. In the case of the other organisms, the acidity of the medium itself was sufficient to obscure the effect of methenamine. Similar experiments with borax, 1:500, at p_H 8.5, showed no effect on Staphylococcus aureus but a considerable reduction in growth in the other organisms. The two factors of the greatest importance as to whether an antiseptic strength of formaldehyde will be reached in the urine of a patient taking methenamine are time and the reaction of the urine. In infections of the upper part of the urinary tract there will not be sufficient time for such a strength to be developed. In acute cystitis a urine sufficiently acid to produce such a strength of formaldehyde will cause such pain and frequency of micturition as to prevent any effective action. In chronic cystitis there may be hope of reaching an antiseptic strength of formaldehyde over a long enough period to be effective. Methenamine might be a valuable prophylactic in cases in which repeated catheterization will be needed. Borax might be of value in the treatment of acute or chronic cases of cystitis, especially if due to a coliform organism.

British Medical Journal, London

1: 631-688 (March 30) 1935

The Huxley Lecture on Clinical Science Within the University. T. Lewis.—p. 631.
Local Anesthesia in Gynecology. A. A. Davis.—p. 636.
Fatal Case of Leptospiral Jaundice of Obscure Origin. G. W. Watson, J. W. McLeod and M. J. Stewart.—p. 639.
*Radiology of the Appendix (Appendiculography). F. G. Wood.—p. 640.
Some Observations on Surgical Uremia. H. L. Attwater.—p. 642.

1: 689-748 (April 6) 1935

Clinical Importance of Fibrositis in General Practice. W. H. M. Telling.—p. 689.
Tuberculosis in Home Contacts: Note on Incidence and Rôle of Human Contagion. G. G. Kayne.—p. 692.
An Insulin Resistant Diabetic. R. D. Clay and R. D. Lawrence.—p. 697.
Some Effects of Artificial Heat on Circulation in Cold Temperature Climates. R. F. Fox.—p. 698.
Case of Megalencephaly Showing Unusual Talent for Calculating Dates. W. M. McGrath.—p. 699.

Radiology of the Appendix.—Wood states that roentgen representation of the appendix may be obtained in all cases in which the lumen of the appendix is not obliterated or obstructed. The method of filling the organ consists in giving a preparation of barium with milk or corn flour at night, following this after an interval of three hours by a dose of magnesium sulphate. Roentgenograms are obtained on the following morning and are continued at such intervals as may appear necessary during the following days until the cecum is entirely empty. Of the 100 patients examined by the author during the last two years, the appendix was successfully filled in ninety-three and failed to fill in seven. Thirty of the patients were operated on, and the roentgen appearances correlated with the operative observations and the pathologic reports. In twenty-eight cases gross and obvious changes in the appendix were noted at operation, while the remaining two showed no evidence of abnormality. The normal appendix gives characteristic appearances in the roentgenogram, and, conversely, the abnormal appendix can also be detected readily, as a rule, from alteration in its contour, emptying rate, position and other changes. A large single fecalith, if it contains calcium, may be visible in a plain roentgenogram and is usually seen close to the right iliac crest. The most characteristic changes are seen when the appendix is the seat of subacute inflammation. There is obvious dilatation of the lumen, especially at the distal extremity, fixation is present in one position and, owing to the diminution or absence of peristalsis, there is delayed emptying of the barium, as the appendix is generally the last to empty. When the appendix lies behind the cecum, it is concealed from view in the earlier roentgenograms. As the cecum begins to empty, however, it comes into view, and it is then sometimes possible to obtain roentgenograms showing its shape and position. When the colon is spastic, the appendix tends to be contracted and the lumen is narrow. When the colon is found to be atonic, the atony appears to affect the appendix at the same time, and it fills with considerable ease and shows a large lumen. Dilatation of the lumen of the appendix appears to be one of the most important roentgenologic signs of disease, especially when it affects the distal extremity and is accompanied by retention of the barium.

Irish Journal of Medical Science, Dublin

No. **111:** 97-144 (March) 1935

General Principles of Surgical Treatment for Pulmonary Tuberculosis and Bronchiectasis. H. M. Davies.—p. 97.
Some Recent Additions to Our Knowledge of Infectious Disease and Their Significance. C. J. McSweeney.—p. 108.
Recent Trends in Diphtheria Prophylaxis. J. C. Saunders.—p. 117.
Nervous and Mental Manifestations of Myxedema. H. L. Parker.—p. 124.
Bearing of Embryology on Clinical Diagnosis in Diseases of Eye. Ida Mann.—p. 128.

Journal of State Medicine, London

43: 187-248 (April) 1935

Incidence of Rickets in Durham and Norfolk (King's Lynn). J. W. McIntosh.—p. 187.
Prevention of Industrial Skin Diseases. W. J. O'Donovan.—p. 199.
Prevention of Disease in Infancy. W. Pearson.—p. 204.
Economics of Tuberculosis Problem. P. Varrier-Jones.—p. 209.
Prevention of Nervous Disorders. H. Yellowlees.—p. 213.
Prevention of Deafness. R. S. Stevenson.—p. 218.
Influence of Hygiene on Surgery. W. E. Tanner.—p. 225.
The Public Health Service and the Prevention of Disease. D. M. Connan.—p. 233.

Journal of Tropical Medicine and Hygiene, London

38: 81-92 (April 1) 1935

Human Onchocerciasis in Kenya: Report of Case. P. G. Preston.—p. 81.
Examination of Saliva. A. Castellani, M. Douglas, P. Redaelli and G. Amalfitano.—p. 81.

Lancet, London

1: 659-722 (March 23) 1935

The Evolution of Mind. J. S. Bolton.—p. 659.
Respiratory Failure Including So-Called Asphyxia Neonatorum: III. Treatment. A. Moncrieff.—p. 664.
Cysts In or Alongside Hernial Sacs. G. H. Edington.—p. 670.
Fracture of Newly Formed Bone. B. Fuchs.—p. 673.
Some Clinical Features of Perforated Jejunal Ulcers. D. Trevor.—p. 673.
*Excretion of Estrin During Pregnancy. S. L. Cohen, G. F. Marrian and M. Watson.—p. 674.
Empyema Complicating New Growth of Lung. E. T. Baker-Bates and G. R. Ellis.—p. 676.

Excretion of Estrogenic Substance During Pregnancy.—Cohen and his associates present data showing that the first fact of physiologic interest is that during the greater part of

pregnancy more than 99 per cent of the total estrogenic material excreted in the urine is in the "combined" ether-insoluble form, which possesses only a low physiologic potency. It is therefore no longer difficult to reconcile the production of large amounts of estrogenic substance in the body during pregnancy with the fact that its injection into pregnant animals may interfere with the normal course of gestation. Either true or pseudo labor is accompanied and may be preceded by a fall in the "combined" theelin and theelol and a rise in the "free" forms of each excreted in the urine. The free theelin or theelol is that fraction which can be extracted from the fresh untreated urine with ether. The combined theelin or theelol is that which can be extracted from the urine only with ether after treatment with acid. It is impossible to determine from the available data whether these changes are caused by the events that initiate labor or whether they are themselves factors in the mechanism of parturition. It is clear from the work of Zondek that the animal body is capable of converting large amounts of administered estrogenic substance into a combined form which is physiologically inactive and from which it may be released by acid hydrolysis. The fact that 99 per cent of the hormone excreted during pregnancy is in such a form suggests that the pregnant woman has the power of similarly inactivating much of the estrogenic substance that she produces. The authors reason that a factor in the initiation of labor is the production in the body of larger amounts of free estrogenic substance of a high physiologic potency, either by hydrolysis of the previously formed combined hormone or by some interference with the normal mechanism of inactivation of the hormone after it is produced. The decrease in the amount of total estrogenic substance excreted just prior to and during labor could be explained on the grounds of the utilization of some of that present in the free state at this period, while the increase in the free hormone excreted might be supposed to represent the unutilized excess.

Medical Journal of Australia, Sydney

1: 323-352 (March 16) 1935

Human Tuberculosis of Bovine Origin in Victoria. R. Webster.—p. 323.
The Pollen Content of the Melbourne Air During the Hay Fever Season of August 1933 to March 1934. Marjorie M. Sharwood.—p. 326.
Some Observations on Etiology of General Paralysis of the Insane. C. R. D. Brothers.—p. 332.
The Problems of Antenatal Care. T. D. Hughes.—p. 334.
Thrombophlebitis Migrans, with an Illustrative Case. M. L. Powell.—p. 336.

1: 353-384 (March 23) 1935

Aboriginal Mentality. H. K. Fry.—p. 353.
Clinical Aspects of Nephrectomy. S. A. Roe.—p. 360.
Glycogen Accumulation Disease. Phyllis M. Anderson.—p. 362.
Leukemic Retinitis: Analysis of Eye Changes in Thirty-Five Cases of Leukemia, Together with Report of Gross Papilledema in a Case of Chronic Myelogenous Leukemia. T. J. F. Frank.—p. 364.

Quart. Bull., Health Org., League of Nations, Geneva

Special Number: 1-128 (Jan.) 1935

Proposed International Standard for Gas Gangrene Antitoxin (Vibrion Septique). P. Hartley and P. B. White.—p. 13.
Proposed International Standard for Gas Gangrene Antitoxin (Edematiens). L. E. Walbum and C. Reymann.—p. 42.
Proposed International Standard for Antipneumococcus Serum (Type I). P. Hartley and W. Smith.—p. 48.
Proposed International Standard for Antipneumococcus Serum (Type II). P. Hartley and W. Smith.—p. 65.
Proposed International Standard for Staphylococcus Antitoxin. P. Hartley and Margaret Llewellyn Smith.—p. 68.
Conference on Standardization of Sex Hormones: Preliminary Note. H. H. Dale.—p. 121.

Japanese Journal of Obstetrics and Gynecology, Kyoto

18: 1-86 (Feb.) 1935

Melanocyte Reaction of Preparations of Pituitary Body and Urine of Cancer Patient. R. Umezawa.—p. 2.
Blood Vessels of Uterine Tumors: Part II. Histologic Observations of Distribution of Blood Vessels in Uterine Cancer. G. Kawanishi.—p. 16.
Histologic Examinations on Fetal Heart Muscle in Human Beings. K. Matsuda and S. Odani.—p. 25.
Biologic Study of Action of X-Rays to Malignant Tumors, Especially on Attitude of Malignant Tumors of Stromal Tissues to X-Rays. H. Kawakami.—p. 35.
Lactation and Reonset of Menstruation. T. Saito.—p. 63.
Experimental Study of Autotransfusion: Part III. Effect of Autotransfusion on Character of Blood. T. Kubota.—p. 73.

Presse Médicale, Paris

43: 465-488 (March 23) 1935

Barbiturate Coma: Eleven Cases. G. Carrière and C. Huriez.—p. 465.
*Obliteration of Right Branch of Portal Vein. N. Strajesko.—p. 469.
*Corneal Cholesterol Arc or Circle. Madeleine H. Paillard.—p. 471.

Obliteration of Portal Vein.—Strajesko describes the case of a man, aged 37, in whom obliteration of the right branch of the portal vein was diagnosed. This was later confirmed at necropsy. As a result he believes that a syndrome exists which permits this condition to be diagnosed during life. It consists first in a splenomegaly accompanied by profuse and repeated gastric hemorrhages, total absence of cirrhotic changes in the right and left lobes of the liver, and absence of ascites. An ascites may nevertheless appear temporarily after hemorrhage and disappear as the blood regenerates. In addition, the syndrome consists of an exceptional development of the subcutaneous collateral anastomoses communicating with the umbilical and para-umbilical veins. The author believes that this description should allow any clinician to suspect obliteration of the principal right branch of the portal vein before its entry into the liver.

Corneal Cholesterol Circle.—Paillard describes three types of cholesterol deposits in the cornea. The first she calls an arc, the second a circle, and the last, for which she has found no adequate name, is a circle of greater width. Altogether 420 cases were observed by her or by Henri Paillard. Proved biliary lithiasis occurred in 11 per cent, xanthoma in 7 per cent, gouty tophi in 2.5 per cent, dry polyarthritis in 13.5 per cent, orbital cellulitis in 26 per cent and arterial atheroma in 2 per cent. The coincidence is less than with gallstones—a fact which indicates that corneal cholesterol precipitation is an earlier lesion in the family of cholesterol disorders than biliary lithiasis. The condition is nevertheless a sign of some significance.

43: 489-504 (March 27) 1935

*Curable and Incurable Phases of Alimentary Dystrophies. G. Mouriquand.—p. 489.
Reflections on One Hundred and Eight Gastrectomies for Ulcer. J. Duval.—p. 491.
Experimental Encephalitis of Rabbit. A. Phylactos.—p. 493.

Phases of Alimentary Dystrophies.—Mouriquand believes that the stages of alimentary dystrophy due to deprivation of vitamin C may be differentiated. The first phase he divides into predeficiency, intermediate and dystrophic phases. In the scorbutic infant in this stage, supplying vitamin C produces increased weight and restoration of nutritive equilibrium. The second stage is that of curability of the deficiency dystrophy but incurability of the general dystrophy. There is finally a stage of complete incurability. At this time, specific treatment comes too late; cachexia is extreme. Necropsy shows hemorrhages in the femoral region.

43: 505-520 (March 30) 1935

*Treatment of Addison's Disease by Common Salt. G. Marañon, I.-A. Collazo and J. Jimena.—p. 505.
Action of New Pancreatic Hormone in Hypertensives. P. Bernal.—p. 507.

Treatment of Addison's Disease by Common Salt.—Marañon and his co-workers treated twelve cases of Addison's disease with oral administration of sodium chloride. The basis for this therapy arises from the disturbance in sodium and potassium ratios in adrenalectomized animals and patients with Addison's disease. They feel that the sodium-potassium disequilibrium produced by the adrenal insufficiency might well be the principal cause of the severe dehydration present in Addison's disease. Whatever the mechanism, however, the clinical efficacy of sodium chloride (usually administered in daily doses of from 3 to 6 Gm. in capsules) is undeniable. In some of their patients the results were astounding and in others were less remarkable. Another advantage of the saline treatment is the economy of cortical extract allowed. In less severe cases the extract can in fact be entirely reserved for complications, such as infections. The saline treatment is well tolerated in general. In some patients gastric disorders are produced. To avoid them the salt may be taken with milk or with sodium bicarbonate. Edema was observed in only one case.

Policlinico, Rome

42: 597-644 (April 1) 1935. Practical Section

Electrophonocardiography: Clinical Study of Mitral Stenosis. U. Diliberto.—p. 597.
Effects of Gamma Rays on Pilose System in Normal and Pathologic Conditions. V. Palumbo.—p. 600.
Primary Tumor of Lung with Neoplastic Thrombosis from Superior Vena Cava to Auricle. A. Fabris.—p. 607.
*Simple Method of Preparing Suspension of Choroid Pigment for Melanoreaction of Henry in Malaria. R. Silvestrini.—p. 614.

Melanoreaction of Henry in Malaria.—Silvestrini reviews the literature on the melanoflocculation reaction of Henry and describes a method of extraction with ether of the choroid pigment, which renders the reaction easy to perform. Henry's method is the following: After the crystalline lens has been removed, the choroid of the ox is scraped and the gelatinous liquid and the melanin are collected. These are mixed, double the amount of distilled water is added and the whole is well triturated. Formaldehyde is added for preservation in the proportion of 1 per cent. A certain amount of precipitation may take place. Filtration is done through glass wool. The filtrate is centrifugated for eight minutes at 4,000 revolutions. The blackish supernatant liquid is decanted in sterile recipients and preserved on ice. It is vigorously shaken twice weekly and used after one month. The stock suspension is diluted to an opacity corresponding to that of a tube marked 0.20 of the albuminometric scale. Applying the method of extracting pigment from melanotic tumors by shaking the tumor fragments with ether, the author extracted in the same manner the pigment from the choroid of the ox to make the suspension for the reaction of Henry. He thus obtains the finest suspension of particles of pigment in ether. The ether in which the pieces of choroid are shaken is poured in a funnel with a stopcock, at the bottom of which several cubic centimeters of physiologic solution of sodium chloride has previously been placed. The pigment is deposited and forms a layer between the salt solution and the ether. The stopcock is opened, the salt solution and the pigment are collected and the ether is discarded. The pigment is shaken in the salt solution and is diluted with physiologic solution of sodium chloride until it shows a weak opalescence. The suspension is distributed in sterilized tubes and the serum to be examined is added in various proportions. With malarial serums the author obtained intense precipitations flocculating after two hours of rest at 98.6 F. If the tubes are observed for a long time, there is no need to take account of slight deposits at the bottom of the tube. Only the rapid, intense and flocculating precipitation and the clarification of the liquid as compared with control tubes have a real value.

42: 193-260 (April 15) 1935. Surgical Section

Achondroplasia Associated with Multiple Angiomas and Fibromas: Case. A. Casini.—p. 193.
Primary Thrombophlebitic Splenomegaly Treated with Splenectomy and Cured for Six Years. G. Giordano.—p. 219.
Testicular Retentions. G. B. Macaggi.—p. 228.
*Anatomopathologic and Pathogenic Study of Diverticula of Duodenum. L. Minucci Del Rosso.—p. 236.

Diverticula of Duodenum.—Minucci Del Rosso reports two cases. A woman, aged 61, had two diverticula and a man, aged 68, had a single diverticulum. On reviewing the pathology he found that there is no morphologic correspondence between duodenal diverticulosis and the classic picture of diverticulosis of the large intestine. The author states that duodenal diverticula in 90 per cent of cases are found between the second and the third portion of the duodenum and are limited to the duodenal segment corresponding to the pancreas. Islands of accessory pancreas are frequently found in the wall of the diverticulum. The dynamics of the development of the relation of duodenum and pancreas is extremely complex and involves both organs. The histologic structure of the duodenal tract, even in the second and third portions, presents accessory diverticular invaginations during the first weeks of life. The author states in conclusion that extrinsic mechanical embryonic factors, such as pressure on the part of the pancreas and torsion of the umbilical loop, in certain cases may lead to the persistence of the characteristic diverticular formations which normally are transient.

Prensa Médica Argentina, Buenos Aires

22: 609-660 (March 27) 1935. Partial Index

*Hemiballistic Syndrome: Cases. M. Alurralde and M. J. Sepich.—p. 609.
Elective Pneumothorax and Its Pathogenic Mechanism. A. A. Raimondi and R. Scartascini.—p. 614.
*Erythrocyte Sedimentation in Obstetrics and Gynecology. D. Taylor Gorostiaga.—p. 639.
Gastro-Intestinal Tract and Sympathetic Nervous System in Infantile Paralysis. G. P. Goñalons.—p. 649.

Hemiballistic Syndrome.—Alurralde and Sepich say that a clinical diagnosis of a degenerative lesion in the hypothalamic nucleus can be made by the presence of hemiballism and that the seat of the hypothalamic lesion in those cases is contralateral to the side of the body affected by hemichorea. The following symptoms are found: The patient is suddenly taken ill with hemichorea of a characteristic nature, followed by absence of sleep and appearance of mental disturbances. The choreic movements are violent, jerking and twitching and of exaggerated intensity, more marked at the root of the limbs than at the distal extremities. They increase in amplitude and frequency when the patient does not try to control them and entirely cease for the few minutes in which the patient can sleep if he is given some hypnotic and sedative. Both the mental and the motor symptoms are aggravated at night. The disease follows a rapid evolution and the patient dies in about six weeks from its onset. In the two cases reported, a clinical diagnosis of a probable vasal lesion in the hypothalamic nucleus causing hemichorea was made.

Erythrocyte Sedimentation in Obstetrics and Gynecology.—Taylor Gorostiaga performed the erythrocyte sedimentation test on 150 women in normal, gynecologic and obstetric conditions. He concludes that the increased speed of sedimentation may have several causes. The interpretation of the Fåhraeus test should be based on the results of a careful clinical examination of the patient. The Katz index increases during menstruation in women clinically normal from 3 to 7 mm. in 75 per cent of the cases. The speed of sedimentation increases in normal pregnancy at the end of the second month in 50 per cent of the cases, in the third month in 83.3 per cent and after the fourth month in 100 per cent. The test is not applicable to an early diagnosis of pregnancy. However, a speed increasing constantly during the test, repeatedly performed, indicates pregnancy. The speed of the sedimentation increases during the first month of normal puerperium in 100 per cent of the cases. It reaches its greatest rate by the ninth day, after which it slowly decreases and reaches normal figures by the thirtieth or forty-fifth day of the puerperium. The speed of sedimentation is greater in puerperal infection than in the normal puerperium and it is in direct relation to the seriousness of the infection. The speed of sedimentation increases greatly in infected abortion and slightly in noninfected abortion, in comparison to that corresponding to the time of evolution of pregnancy. In all women who were subjected by the author to curettage after abortion, in spite of the presence of a high Katz index, the postoperative period was normal and the patients were discharged in good condition. The speed of erythrocyte sedimentation is normal in women with small or middle sized fibromas that have not undergone degeneration or infection or are not complicated by abundant hemorrhages, as well as in those who have an ovarian cyst, if its pedicle is not twisted. The speed of sedimentation increases slightly in adnexitis. As it is in relation to the evolution of the disease, the performance of the operation can be determined by the results of the test rather than by the curve of the fever. The speed of sedimentation increases in large fibromas and still more in pyosalpinx, parametritis and bartholinitis. In uncomplicated extra-uterine pregnancy the speed corresponds to that of normal pregnancy at the same period of evolution and it increases in complicated extra-uterine pregnancy. A differential diagnosis between either chronic or subacute adnexitis, on the one hand, and uncomplicated extra-uterine pregnancy on the other, cannot be made by the results of the test as it is between the former condition and a peritoneal blood effusion from a ruptured extra-uterine pregnancy. A differential diagnosis between acute adnexitis and ruptured extra-uterine pregnancy can be made by the results of the test when the clinical examination of the patient excludes the presence of pyosalpinx.

Semana Médica, Buenos Aires

42: 913-972 (March 28) 1935. Partial Index

Diabetes and Tuberculosis. R. A. Izzo, A. Casanegra and J. B. Ferradás. —p. 913.
*Right-Angle Triangular Shadow of Posterior Mediastinum: Clinical and Roentgen Interpretation. D. Thamm, F. A. Medici and C. A. Rey. —p. 918.
Thalamic Syndrome: Case. H. R. Rugiero.—p. 921.
Ample Gastrectomy in Gastric Ulcer. M. J. Taverna.—p. 952.

Right-Angle Triangular Shadow of Posterior Mediastinum.—Thamm and his collaborators say that the clinical diagnosis of the process that causes a right-angle triangular shadow of the posterior mediastinum to appear in the roentgenogram may be made by a differential diagnosis of the following conditions: adhesions of the middle and inferior lobes of the lung; costomediastinal pleuritis; pneumonia of any etiology, especially that described by Pospischin as a complication of whooping cough; bronchiectasis; atelectasis in bronchial compression by a ganglion of increased size; dislocation of the inferior lobe of the lung (Bernou); bronchial cancer, and encysted empyema. To make a differential diagnosis with exudative mediastinal pleurisy is easy, but to make it with costomediastinal pleurisy is difficult. In the case reported by the authors, the presence, evolution and disappearance of the clinical symptoms (presence of tubercle bacilli in the sputum and hemoptysis, which disappeared with the favorable evolution of the disease) coincided with the presence, evanescence and complete disappearance of a right-angle triangular shadow of the posterior mediastinum in the roentgenogram. A puncture at the base of the left hemithorax in this case gave negative results. The clinical diagnosis was tuberculous infiltration (epituberculosis), superficially located in the zone that corresponds to the left accessory lobe of the lung.

Beiträge zur Klinik der Tuberkulose, Berlin

86: 117-160 (March 23) 1935. Partial Index

*Diagnosis of Carcinoma of Bronchus. A. Kenner.—p. 117.
*Significance of White Blood Picture in Relation to Sedimentation Speed of Erythrocytes in Clinical Estimation of Some Forms of Pulmonary Tuberculosis. G. Thiele.—p. 126.
Technical Improvements in Thoracoplasty. R. Noack.—p. 146.

Diagnosis of Carcinoma of Bronchus.—Kenner describes the chief clinical symptoms of carcinoma of the bronchus on the basis of observations in eighteen cases. He stresses the almost general occurrence of an accompanying chronic pneumonic involvement of the affected portion of the lung. He thinks that, if there is a chronic pneumonia of the indurating, abscess-forming or gangrenous form, it is necessary to search for a stenosis of the pertaining bronchus. The concurrence of several accompanying symptoms, such as relapsing hemoptyses, stenotic respiration, or formation of collateral vessels in the skin, are of diagnostic significance.

The Leukocytes and Sedimentation Speed in Tuberculosis.—Thiele compared the blood picture and the sedimentation speed of the erythrocytes in 100 male patients with open tuberculosis. Some had caverns, but in most the clinical course had a tendency to latency. The sedimentation values were normal or nearly normal, but the white blood picture showed considerable changes. All forms of leukocytes showed qualitative and quantitative changes in the majority of the cases, while in others only one of the types showed alterations. The total number of leukocytes was normal or increased, never reduced. The quantitative blood picture showed a considerable lymphocytosis, frequently in spite of a simultaneously existing deviation of the neutrophils to the left. The lymphoid cells likewise showed qualitative deviations from the normal. In cases presenting nearly normal neutrophil blood pictures, the lymphocytes were still strongly altered. In no case was the blood entirely normal. Discrepancies between the hematologic and the clinical aspects were frequent. The author gained the impression that a normal sedimentation speed and a normal, total number of leukocytes do not exclude the existence of caverns. The tuberculous process has been arrested only after the blood has become normal again. In the cases examined by the author, the blood picture proved superior to the sedimentation reaction as an indicator of the status of the pulmonary process. It proved that a real arrest of the process had not taken place when this assumption seemed justified on the basis of the sedimentation speed and the other clinical aspects. The author rejects Schilling's "phases" and his interpretation of the hemogram, because they do not correspond to the real conditions. He thinks that for practical purposes it is preferable to use Arneth's simplified neutrophil blood picture, in which only the cells of the first class are determined among 100 neutrophils.

Chirurg, Berlin

7: 233-264 (April 15) 1935. Partial Index

Indication and Technic of Resection of a Cerebral Lobe. W. Tönnis. —p. 233.
*Hypertonic Solution of Dextrose in Treatment of Increased Intracranial Pressure. K. Kamniker and W. Sinnreich.—p. 239.
Morphine as Premedication in Evipan Anesthesia. K. Vogeler and Kotzoglu.—p. 242.

Dextrose in Treatment of Increased Intracranial Pressure.—Kamniker and Sinnreich report thirty-two cases of skull injuries treated with hypertonic solution of dextrose. The method consisted in slowly (from ten to fifteen minutes) injecting into a vein about 70 cc. of a 50 per cent solution in women and 100 cc. in men. The injections were given one day apart and an average of three injections was used. Twelve of the patients were rendered symptom free and fourteen were discharged as improved. In six there were no results. Three of these had sustained severe destructive brain lesions. The author concludes that the method is safe and valuable in lowering intracranial pressure. It is effective when the headache, stupor and dizziness are caused by rising intracranial pressure.

Deutsche Zeitschrift für Chirurgie, Berlin

244: 663-795 (April 5) 1935. Partial Index

Methods of Bone Transplanting in Lower Jaw. M. Wassmund.—p. 704.
*Exophthalmic Goiter, Thyroid and Vegetative Nervous System: Neurovegetative Hormone System as Biologic Unit. P. Sunder-Plassmann. —p. 736.

Neurovegetative Hormone System.—Sunder-Plassmann was able to demonstrate, in his histologic studies, the existence in the cells of the thyroid of a "terminal reticulum" of the vegetative nervous system. This reticulum was traced as it proceeded from a cell of the vessel wall to an individual cell of the gland, where it spread out within the plasma and continued uninterruptedly in a close network so as to include all the cells in one functioning unit. The thyroid receives its nerve supply, according to the author, not alone from the superior cervical sympathetic ganglion but to a great extent from the three cervical ganglions, the superior laryngeal nerve, the recurrent laryngeal nerve, the carotid plexus, the cardiac branches and the glossopharyngeal nerve and from the walls of all the thyroid blood vessels. Resection of the sympathetic does not accomplish denervation of the thyroid. A more or less complete denervation of the thyroid would imply in addition to extensive resection of the nerves stripping of the thyroid vessels, the common carotid artery and the carotid sinus, or their treatment with phenol and tricresol as advised by Cattaneo. A more or less complete blocking of the sympathetic innervation can be obtained temporarily by administering to an animal tartaric acid ergotamine. The author was further able to demonstrate that the thyrotropic hormone effect could be completely eliminated by administering to the animal a type of anesthetic which acted on the brain stem (solution of the sodium salt of secondary butyl-beta-bromallyl barbituric acid), thus proving that the vegetative nervous centers are located in the vegetative midbrain, which controls both the hypophysis and the thyroid. Experimental stimulation of the neurovegetative receptor areas in the carotid sinus produced a definite and pronounced stimulation of the functional and secretory activity of the thyroid. The reaction varied with the type of stimulus. These facts suggest that the neurovegetative hormone system is one individual biologic unit. The rôle of the nervous system in the activity of the thyroid as well as in the pathogenesis of thyrotoxicosis is of the greatest importance. A severe case of thyrotoxicosis represents a permanent irreversible alteration and is therefore best treated by subtotal resection of the gland. Sympathectomy, roentgen irradiation and medicinal agents are not effective.

Klinische Wochenschrift, Berlin

14: 481-520 (April 6) 1935. Partial Index

*Elimination of Cevitamic Acid in Health and Disease. H. Schroeder.—p. 484.
New "Soy-Water Bread" and Use of Soy Flour in Treatment of Diabetes Mellitus and Obesity. F. Schellong.—p. 487.
*Follicle Hormone Content of Blood in Eclampsia. W. Bickenbach and H. Fromme.—p. 496.
Blood Pressure Reduction in Pyelovenous Reflux. K. Liedholm.—p. 497.

Elimination of Cevitamic Acid.—Schroeder studied the elimination of cevitamic acid in healthy persons and in persons with various disorders (exophthalmic goiter, typhoid, cystitis, polyarthritis, tuberculosis, pneumonia, diabetes, carcinoma and other conditions) before and after the administration of cevitamic acid. His investigations indicate that during infectious diseases the consumption of cevitamic acid is often considerably increased. Other investigators likewise observed a gradual increase in the cevitamic acid content of the serum during the period of convalescence after sepsis and typhoid. The author deplores that he was not able to extend his studies to cases of capillary toxicoses and to other hemorrhagic diatheses, in which other investigators had obtained favorable results with the intravenous administration of cevitamic acid. However, he thinks that the prompt improvement often produced by the administration of cevitamic acid in the hemorrhagic diatheses developing after infectious diseases, as well as the result of his own investigations, make it appear probable that a hypovitaminosis (to be sure, on an endogenic basis) is an essential factor in the pathogenesis of the capillary toxicoses. He thinks that studies of suitable cases will furnish the definite proof of the correctness of his conclusions, and also that they may indicate why the predisposition to capillary hemorrhages is more pronounced in some cases. He points out that Presnell's observations on guinea-pigs correspond with his own, because this author observed that in case of a deficiency in vitamin C the coagulation time is prolonged and the number of erythrocytes and the hemoglobin are reduced before the appearance of the symptoms of scurvy.

Follicle Hormone Content of Blood in Eclampsia.—Bickenbach and Fromme found that, in spite of the increased follicle hormone content of the urine of patients with eclampsia reported by Heim, even the extraction method, which they employed on the blood of four women with eclampsia, disclosed no noticeable increase in the follicle hormone content of the blood over the values observable during normal pregnancy.

Medizinische Klinik, Berlin

31: 469-500 (April 12) 1935. Partial Index

*Technic and Practical Significance of Insufflation of Uterine Tubes. J. Novak.—p. 480.
*Do Narcotics Influence Action of Therapeutic Fever? I. Wehner.—p. 482.
Observations in Brain Surgery. B. Oton.—p. 483.
*Refractory Case of Lambliasis of Biliary Passages. H. Scheidel.—p. 485.
Reduced Resistance Against Infections in A Avitaminosis. M. Frank.—p. 486.

Insufflation of Uterine Tubes.—Novak employs Rubin's technic of insufflation. The apparatus consists of a carbon dioxide tank from which the gas passes through a regulating valve into a glass volumeter. The gas is passed through sterile water and a boric acid solution or some other sterile fluid, and thus dust particles and other matter are removed. Then it passes through a sterile tube to an intra-uterine catheter introduced beyond the internal os. By means of a rubber cone that surrounds the catheter, the external os is closed airtight. The intra-uterine gas pressure is indicated by a manometer attached to the volumeter. In recent years a kymograph has been used and, although this instrument is not necessary, it is a valuable aid. The author considers insufflation of the uterine tubes advisable in cases in which other methods of examination, including the examination of the woman's husband and of a specimen of semen, do not reveal causes of sterility. If tuberculosis of the internal genitalia is suspected, insufflation should not be done. The most favorable time for insufflation is immediately following the menstrual period. Before resorting to insufflation, the apparatus should be carefully inspected. Then the uterine cervix is drawn forward by means of a ballforceps. Dilation of the cervical canal is usually unnecessary because it is usually permeable for an intra-uterine catheter. Anesthesia is unnecessary because the method causes little pain. Moreover, because the pain phenomena are of great diagnostic significance, it is undesirable to exclude them by anesthesia. The quantity of gas necessary for the insufflation is approximately 160 cc. The intra-uterine pressure should never exceed from 200 to 220 mm. of mercury. If the tubes are impermeable at the uterine ostium, the intra-uterine pressure increases rapidly and the patient complains of painful tension in the middle of the lower part of the abdomen. As soon as the pressure reaches 200 or 220 mm. of mercury, the attempt is given up and the gas escapes from the uterus. If the tubes are obstructed at the abdominal ostium, the patient experiences pains also on both sides of the abdomen, and the gurgling tubal sounds and the characteristic pains in the shoulder are absent. If at least one tube is patent, but so constricted that the gas penetrates only with great difficulty, the manometric pressure rises at first rather high and then recedes gradually. Occasionally insufflation produces a therapeutic effect in that it opens the obstruction and thus counteracts sterility.

Influence of Narcotics on Therapeutic Fever.—Wehner points out that the extremely high temperatures in fever therapy are frequently accompanied by severe headaches, nausea, vomiting, pains in the muscles and joints, palpitation of the heart, dyspnea, insomnia and other symptoms, so that the patient demands the premature interruption of the treatment. For this reason it would be desirable to give the patients remedies that would reduce these symptoms. Antipyretics are inadvisable because, by reducing the fever, they would defeat the object of the fever therapy. The author decided to try different narcotics and she found that opiates and certain barbituric acid derivatives reduce some of the undesirable symptoms without interfering with the biologic action of the fever therapy.

Lambliasis of Biliary Passages.—Scheidel relates the clinical history of a man, now aged 54. The anamnesis indicates that symptoms which were repeatedly interpreted as being caused by cholecystitis date back seventeen years. The lambliasis was not recognized until twelve years later. After that the patient was subjected to various therapeutic measures, including treatment with neoarsphenamine and duodenal irrigations. Although a reduction in the number of the protozoa was followed by improvement in the disturbances, complete cure was not obtained.

Wiener klinische Wochenschrift, Vienna

48: 417-448 (April 5) 1935. Partial Index

Demonstration of Tubercle Bacilli According to Method of Löwenstein: Experiences in Vienna Children's Clinic. J. Siegl.—p. 417.
"Radium Bomb" or More Radium Institutes with Average Amounts of Radium? L. Freund.—p. 421.
*Epidemiology and Pathogenesis of Epidemic Acute Serous Meningitis. H. Schneider.—p. 425.
Observation of Anomalies of Two Muscles on Living Persons. G. Sauser.—p. 430.

Epidemic Acute Serous Meningitis.—Schneider points out that the clinical aspects of serous meningitis, the so-called aseptic meningitis of Wallgren, seem to correspond partly to an abortive epidemic encephalitis and partly to an abortive poliomyelitis. He arrived at this opinion on the basis of necropsies in acute cases and of the after-examinations of former patients, for, after an apparent recovery from the meningitis, symptoms of parkinsonism developed in some cases. He discusses the epidemiology on the basis of observations he made in the course of seven years in 150 cases. The disorder seems to confer an immunity, it is communicable and occasionally it is transmitted by carriers, who themselves remain free from it. In some cases the disorder seems to become manifest in two successive outbursts. The disease is most frequent during the later part of the summer. The author points out that several of these epidemiologic factors indicate a poliomyelitic etiology of the serous meningitis. In a discussion of the necropsies he stresses that the histologic aspects likewise indicate relations to poliomyelitis. He describes the bacteriologic observations and points out that the term aseptic meningitis is unsuitable because it is contradictory. Bacteriologic studies of a number of patients disclosed various types of streptococci: nonhemolyzing ones,

hemolyzing ones and some that produced a green zone. The author points out that some streptococci, among them the diplostreptococcus that has been found in the brain of patients with epidemic encephalitis, are now considered saprophytes. It is known that some anaerobic organisms require symbiosis with saprophytes for their existence. In this connection he calls attention to the bacillus of tetanus, which requires for its growth the presence of aerobic bacteria that absorb the oxygen and thus produce anaerobic conditions. The virus of poliomyelitis likewise can be cultivated only under anaerobic conditions. The author cites evidence that makes a symbiosis of the virus of poliomyelitis with streptococci seem likely. He thinks that the atypical abortive course of poliomyelitis in the cases observed by him is due to the same cause. The high incidence of the disorder during the summer may be due to the fact that work in the hot sun produces a predisposition. In this connection it is pointed out that Japanese encephalitis is likewise most frequent during the hot season. Another factor is the possibility of the transmission of the virus in the dust.

48: 449-480 (April 12) 1935. Partial Index

*Pathochemistry of Urine in Carcinoma. M. Weiss.—p. 454.
Transcutaneous Method of Bronchography by Means of New Instrument. J. Sorgo.—p. 462.
Extragenital Lymphogranuloma Inguinale in a Nurse. H. Homma and H. T. Chaglassian.—p. 464.
*Atrophic Cirrhosis of Malarial Origin. O. Serefettin.—p. 466.

Chemistry of Urine in Carcinoma.—Weiss concedes that no method of urinalysis definitely demonstrates the existence of a malignant tumor but only makes its existence probable. Moreover, not a single pathologic aspect of the urine, but rather the collective consideration of several aspects, is of diagnostic value. The author considers first the pigment elimination and the specific gravity of the urine of cancer patients. In cases of gastro-intestinal cancer, for instance, the urine may become relatively pale. The appearance of urochromogen in the urine is an early sign of some types of cancer, and a positive urochromogen test in an older person, who is free from fever, severe cardiac decompensation and tuberculosis, should make the physician suspicious of a malignant growth. The specific gravity of the urine of cancer patients may be somewhat reduced. Increased intestinal putrefaction, which is indicated by an indican reaction, the presence of urorrhodin, Thormählen's test that demonstrates the presence of indole-like substances or a test that determines the oxacids, often indicates the presence of gastro-intestinal cancer. The estimation of the mineral metabolism on the basis of urinalysis is valuable in determining cancer metastases in the bones. A reduction in the chlorides and an increase in the calcium indicate an endogenic origin of the calcium and consequently make probable the existence of bone metastases. In order to determine the presence of hepatic metastases, the author resorts to a method demonstrating the existence of tyrosine. He discusses the protein disintegration in cancer and emphasizes that there is no protein disintegration that is specific for cancer. He gives especial attention to the nucleo-albumin elimination in the urine and believes that the nucleo-albumins may favor the development of cancer. He discusses the significance of urinalysis for the detecting of changes in the ferment metabolism and admits that these studies on the ferment metabolism cannot be definitely evaluated as yet.

Atrophic Cirrhosis of Malarial Origin.—According to Serefettin, most authorities agree that malaria may lead to hypertrophy of the liver, but the possibility of atrophic cirrhosis is not so generally admitted. Some investigators suggest that malaria patients who develop atrophic cirrhosis are either alcohol addicts or are syphilitic. But there are some, particularly those who practice in paludal regions, who agree that malaria may produce an atrophic cirrhosis. To the suggestion that alcoholism might be the cause, the author replies that his own observations, as well as those of other observers, were made on Mohammedan patients; that is, persons who had never taken alcohol. Moreover, the patients were free from tuberculous lesions and the serologic reactions for syphilis were negative. In describing the symptomatology, the author states that the patients are pale, which differentiates them at once from those with alcoholic cirrhosis, who usually have a reddish appearance. Postmalarial atrophic cirrhosis is characterized also by general weakness, anemia and emaciation of the extremities and of the chest, in strong contrast to the swollen abdomen. Then there is ascites, dilatation of the abdominal veins, and enlargement of the spleen so that it reaches beyond the umbilicus. The liver is not palpable, even following withdrawal of the ascitic fluid. The pulse is weak and accelerated and there are cardiac murmurs like those of anemia. The temperature fluctuates and occasionally reaches extremely high values. The urine contains urobilin, urobilinogen and bilirubin and, in some cases, also indican. The erythrocyte count fluctuates between two and three millions. Necropsy disclosed that the anatomic aspects of postmalarial atrophic cirrhosis differ somewhat from those of the alcoholic and the syphilitic type. The surface of the malarial liver is not so humpy and is less firm than in alcoholic cirrhosis. The connective tissue strands do not show an advanced development. The bile passages and arteries are not completely destroyed, and the process of degeneration is not advanced. If the patients have not reached a state of advanced cachexia, the condition is still amenable to treatment, and much better therapeutic results can be obtained than is the case in the alcoholic form. The author administers 1 Gm. of quinine for ten successive days; then follows a pause of eight days, after which the treatment is resumed for eight or ten days and, following another pause of seven days, the medication is resumed for six or eight days more. The diet should provide large quantities of vegetables and fruits, but the proteins, carbohydrates and fats should be restricted. The patient is kept in bed and the constipation is adequately treated. In order to compensate for the deficient hepatic function and to stimulate diuresis, liver preparations are administered. Many patients improve considerably under this treatment.

Zeitschrift für Kinderheilkunde, Berlin

57: 75-184 (March 21) 1935. Partial Index

Influence of Open Air Treatment on Course of Tuberculosis in Childhood. G. Weber.—p. 75.
*Serologic Diagnosis and Specific Treatment of Whooping Cough. M. Gundel, W. Keller and W. Schlüter.—p. 89.
Determination of Protein by Means of Acid Binding Power. E. Freudenberg.—p. 108.
*Malariotherapy of Nonsyphilitic Nervous Disturbances During Childhood. L. von Dobszay and Ilona Fischer.—p. 124.

Serologic Diagnosis of Whooping Cough.—Gundel and his associates describe a method of complement fixation in whooping cough. The antigen is a concentrated suspension of whooping cough bacilli in alcohol with the addition of lecithin, which they found highly specific. The reaction may become positive at the end of the second or third week after whooping cough has been contracted; that is, even before the onset of the typical coughing attacks. The reaction remains negative in cases with severe complications and in lethal cases. The percentage of unexplainable failures in definitely demonstrated cases of whooping cough amounts to 3 per cent. The authors state that they generally observed considerable antibody formation following vaccination with whooping cough vaccine. They observed also that the antigenic action of various strains of the bacillus differs considerably. In order to gain better insight into the immunologic processes, they made studies on the endotoxins of the whooping cough bacillus and succeeded in obtaining a highly potent endotoxin with a strong toxic effect for rabbits and mice. However, in its present form it proved unsuitable for purposes of immunization. Attempts to use this endotoxin for diagnostic purposes, in the form of intracutaneous tests, failed.

Malariotherapy of Nonsyphilitic Nervous Disturbances.—Von Dobszay and Fischer decided to try malariotherapy in early and late postencephalitic disturbances, in Little's disease, in idiocy and in epilepsy. They discuss their clinical observations and results. Malariotherapy proved entirely ineffective in five cases. Two of these children had the late form of the postencephalitic disturbance, two others were idiots and the fifth had true idiocy. Malariotherapy had definitely harmful effects in two cases. Three children, two idiots and one with Little's disease, showed slight improvement following the treatment. One child with genuine epilepsy showed great improvement and two children, in whom the postencephalitic disturbances were in the early stage, were completely cured.

The authors reach the conclusion that malariotherapy is justified in cases of severe, refractory disorders of the nervous system, particularly in those complicated by feeblemindedness. They consider it most promising in the early stages of postencephalitic disorders.

Zeitschrift für klinische Medizin, Berlin

128: 1-120 (March 20) 1935. Partial Index

*Diiodotyrosin and Compound Solution of Iodine in Treatment of Hyperthyroidism. H. Gotta.—p. 1.
Studies on Electrical Skin Resistance Following Sea and Sun Baths. H. Meissner.—p. 12.
Determination of Site of Development of Ventricular Extrasystole. H. Baumann and A. Weber.—p. 18.
*Action of Adrenal Cortex Extract on Cholesteremia. C. V. Medvei.—p. 58.

Diiodotyrosin and Compound Solution of Iodine in Hyperthyroidism.—Gotta studied the efficacy of diiodotyrosin and of compound solution of iodine, because some investigators maintained that diiodotyrosin is more effective than compound solution of iodine, while his own studies had convinced him that the efficacy of the two preparations is about the same. From observations on twenty-six patients with hyperthyroidism, he reaches the conclusion that there is no difference between the action of compound solution of iodine and of diiodotyrosin. The differences that may be observed in the action of the two are merely the result of the order in which they are administered; that is, the preparation that is given first is most effective. The author discusses also the pathologic anatomy of the thyroids that were removed following treatment with iodine and reviews animal experiments. He summarizes his observations as follows: 1. Diiodotyrosin as well as compound solution of iodine produce in hyperthyroidism a temporary improvement that is followed by an exacerbation. The latter develops, no matter whether the treatment is continued or interrupted: in the latter event the exacerbation develops earlier. In exceptional cases the improvement may be permanent, no matter which of the two preparations is employed. 2. There are cases of hyperthyroidism that are resistant to diiodotyrosin and the author found that these cases were likewise resistant to iodine. 3. Comparative studies on two groups of patients, indicating that the preparation which is given first is the most effective, convinced the author that the iodine of diiodotyrosin produces the therapeutic effect, for it is known that iodine, if administered with interruptions, loses its efficacy more and more. The author regards diiodotyrosin as a prehormone of thyroxine. Its regular occurrence in the normal thyroid and the biologic similarity and the chemical relationship between the two substances indicate this.

Action of Adrenal Cortex Extract on Cholesteremia.—Medvei points out that, while it is generally conceded that epinephrine, the active principle of the adrenal medulla, effects an increase in the cholesterol content of the blood, opinions differ about the effect on the blood cholesterol of adrenal cortex extract. Recent studies on B avitaminosis disclosed that various modes of extraction of the active principle of the adrenal cortex result in products with slightly different actions. For instance, one product of the adrenal cortex, extracted by primary alkaline hydrolysis, was found to inhibit the hypercholesteremia as well as the reduction in the blood phosphatides of pigeons with B avitaminosis, while another product, obtained by acid extraction, was also found to inhibit the hypercholesteremia but to promote the reduction in the phosphatides. The latter substance was found to aggravate the B avitaminosis, while the first substance improved it. These and other observations seemed to indicate that adrenal cortex extract contains at least three distinct components. Attempts to isolate these three substances succeeded. Other authors searched for still other factors. The author studied the action of adrenal cortex extract on the cholesterol content of the blood of several patients with Addison's disease and he also made tests on persons free from endocrine disorders. He found that adrenal cortex extract that was prepared according to the method of Swingle and Pfiffner and contained no epinephrine reduces the cholesterol content of the blood in the majority of normal persons. Correspondingly, a hypercholesteremia was found in Addison's disease. However, in case of hyperfunction of the adrenal cortex, normal or subnormal blood cholesterol values were found. These observations correspond with the reports on epinephrectomized animals. The author observed Addison's disease in two siblings and considers this a new proof for the existence of a constitutional predisposition for this disorder, which he traces to a genotypical defect of the adrenals.

Hospitalstidende, Copenhagen

78: 337-364 (March 26) 1935

*Treatment by Inanition in Disturbances of Urinary Tract. E. W. Gøthgen.—p. 337.

Treatment by Inanition in Disturbances of Urinary Tract.—According to Gøthgen, an absolute requirement in inanition treatment is that no sugar or carbohydrate in general be given, and a successful outcome of the treatment depends on the absence of complications. Because of its simplicity, short duration and high percentage of cures he advocates the treatment as the general method for hospitalized patients with pyuria and calls attention to the further advantage that a negative result almost certainly indicates a complication. The method is also considered a valuable feature in therapy after operations on infected urinary tracts, with possible significance in some cases in preoperative treatment.

Norsk Magasin for Lægevidenskapen, Oslo

96: 345-448 (April) 1935

*Triboulet Reaction Controlled by Roentgen Examination. G. Hertzberg.—p. 345.
*Hemolytic Fecal Streptococci (Enterococci). S. D. Henriksen.—p. 361.
Miliary Carcinosis Developed from Cancer of Stomach in Boy Aged 19. E. Schie.—p. 374.
Investigations on Iron Metabolism in Pregnancy: III. Determinations of Hemoglobin and Iron in Blood of Pregnant Women. K. U. Toverud.—p. 381.
Attempts at New Treatment of Erythema Nodosum. J. Heimbeck.—p. 390.
After-Examination of Patients Operated on for "Primary Chronic Appendicitis." E. Poppe.—p. 395.
*Limy Bile. R. B. Engelstad.—p. 407.
Roentgen Treatment of Pruritus Ani. R. B. Engelstad.—p. 411.

Triboulet Reaction Controlled by Roentgen Examination.—On the whole there was agreement between the results of the Triboulet reaction and of roentgen examination of the intestine in Hertzberg's forty-six cases. He says that the Triboulet reaction is not specific and may be influenced by other nonspecific factors. While no roentgen symptoms are pathognomonic for intestinal tuberculosis, localization of the pathologic results about the ileocecal region is most important in the differential diagnosis in intestinal tuberculosis.

Hemolytic Fecal Streptococci (Enterococci).—Henriksen says that biochemical study of thirty-eight strains of enterococci, eighteen of which were hemolytic, showed that all the strains were heat resistant, gave low p_H concentration, grew in 30 per cent solution of bile and reduced methylene blue. All but one hydrolyzed sodium hippurate. Most strains fermented mannitol, sorbite and trehalose. Only two of the hemolytic strains were virulent in mice, and only two strains, both of the gamma type, were the probable cause of disorders in man. The author asserts that a relationship is established between the enterococci and Streptococcus acidi-lactici and points to the theoretical and practical significance of classification of hemolytic streptococci isolated from feces or other material.

Limy Bile.—Engelstad states that, while calcium carbonate may be found in the gallbladder as a common component of gallstones, it may also appear as a special deposit as a stone or a milk-white fluid or a half-fluid mass. Because of the variation in color and consistency he prefers the term "limy bile" (Knutsson) to "milk of calcium" bile or calcium carbonate stones. In his case, with roentgen diagnosis confirmed on operation, the history pointed to a gallstone disturbance. The gallbladder, in addition to the dark brown, thick, tarlike limy bile, also contained a clear, thin, hydropsic bile and numerous concrements. There was an obstruction in the cystic duct. Obstruction of the cystic duct, the author says, seems almost always to be present in this condition and may perhaps assume a certain pathogenic rôle.